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STATISTICAL REPORT

ON THE

SICKNESS AND MORTALITY

IN THE

ARMY OF THE UNITED STATES,

COMPILED FROM

THE RECORDS OF THE SURGEON GENERAL'S OFFICE;

EMBRACING

A PERIOD OF SIXTEEN YEARS,

FROM JANUARY, 1839, TO JANUARY, 1855.

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PREPARED UNDER THE DIRECTION OF  
BREVET BRIGADIER GENERAL THOMAS LAWSON,  
SURGEON GENERAL UNITED STATES ARMY,

BY  
RICHARD H. COOLIDGE, M. D.,  
ASSISTANT SURGEON U. S. ARMY.

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WASHINGTON:  
A. O. P. NICHOLSON, PRINTER.  
1856.



STATISTICAL REPORT  
ON THE  
SICKNESS AND MORTALITY

ARMY OF THE UNITED STATES

THE RECORDS OF THE SURGEON GENERAL'S OFFICE

IN SENATE OF THE UNITED STATES,

August 5, 1856.

*Resolved*, That there be printed the usual number, and also five thousand extra copies of the report of the Secretary of War, communicating a copy of the "Statistical Report on the Mortality and Sickness in the United States Army," fifteen hundred copies of which shall be for the use of the Medical Department of the army.

Attest:

ASBURY DICKINS,

Secretary.



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## REPORT

OF

# THE SECRETARY OF WAR,

IN COMPLIANCE WITH

*A resolution of the Senate, calling for a copy of the Statistical Report on the Mortality and Sickness in the United States Army.*

WAR DEPARTMENT,  
*Washington, July 28, 1856.*

SIR: In compliance with the resolution of the Senate of the 16th instant, I have the honor herewith to transmit a communication from the Surgeon General of the army, accompanied by "a copy of a Statistical Report on the Sickness and Mortality of the Army of the United States."

Very respectfully, your obedient servant,

JEFF'N DAVIS,  
*Secretary of War.*

Hon. J. D. BRIGHT,  
*President of the Senate.*

SURGEON GENERAL'S OFFICE,  
*July 26, 1856.*

SIR: A Statistical Report on the Sickness and Mortality in the Army of the United States, for a period of twenty years, from January, 1819, to January, 1839, embracing the medical topography of the several military posts, and information respecting all those agencies which may have influenced the health of the troops, was prepared and published under my direction in 1840. It was my intention to have similar reports compiled from time to time, but circumstances beyond my control have delayed the fulfilment of that design.

With this purpose in view, I addressed the following circular to the medical officers:

"SURGEON GENERAL'S OFFICE,  
*April 30, 1852.*

"SIR: It is contemplated to draw up a statistical report on the 'sickness and mortality in the army of the United States,' in continuation of the publication issued from this office in 1840.

"You are therefore requested, in accordance with the requirements of paragraph 51, Medical Regulations, 1850, to prepare a paper on the medical topography of the post at which you are stationed. You will describe the geographical position of the post, the physical aspect of the



surrounding country; the geological formations; its flora; its fauna, (the animals, trees, and plants belonging to it;) the characteristics of climate; the nature and causes of the diseases prevailing at the post and its vicinity, and how far these diseases can be traced to general and local causes; how far to habits and modes of life, to water, diet, &c., &c.

“In this connexion, you are also requested to collect together as many facts as possible concerning the vital statistics of the inhabitants in the vicinity of your post, particularly of the Indian tribes; giving a brief but clear account of their several diseases, &c., &c., embracing every matter of information calculated to prove useful or interesting to the department and the medical world.

“From the retained copies of the sick reports, you will draw up the necessary tabular statements to elucidate the subject, and give the results in a condensed form. As it is proposed to publish each individual essay under the name of the gentleman who draws it up, all facts, statements, and conclusions will rest upon the responsibility of the officer making the report.

“Very respectfully, your obedient servant,

“TH. LAWSON,  
“*Surgeon General.*”

The replies to this circular form a prominent feature in the statistical report herewith submitted, which presents the principal facts connected with the health of the troops for a period of sixteen years, from January, 1839, to January, 1855.

The duty of compiling this report from the records of this office was intrusted to Assistant Surgeon Richard H. Coolidge, United States army, to whose letter, herewith transmitted, you are respectfully referred for more particular information respecting the general arrangement and details of the work.

I have the honor to be, very respectfully, your obedient servant,

TH. LAWSON,  
*Surgeon General.*

HON. JEFF. DAVIS, *Secretary of War.*

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SURGEON GENERAL'S OFFICE,  
July 25, 1856.

SIR: In entering upon the duty of preparing a Statistical Report on the Sickness and Mortality in the Army of the United States, in continuation of the one prepared under your direction by Assistant Surgeon Samuel Forry, and published in 1840, I proceeded, in obedience to your instructions, to examine all the records pertaining to the subject, with the view of arranging the whole in one general system. An extended examination of the original reports led to the conclusion that, although it was possible to exhibit with accuracy the entire amount of sickness and mortality, except for a portion of the time when the United States was at war with Mexico, the utility of such statistics would not be commensurate with the very great amount of labor necessary to their compilation.

During the sixteen years embraced in this report, the army has had but three years' exemption from field operations and actual hostilities. The war with the Seminole Indians in Florida continued until the summer of 1842; in 1846 war was declared with Mexico, and the forces of the United States were not withdrawn from that country until July, 1848. Since that time the greater portion of the army has been almost constantly employed in long and fatiguing marches, incident to the establishment and occupation of military posts in the newly acquired territories, and to the protection of a greatly extended frontier. Not a year, and, indeed, rarely



a month has passed, in which a part of the army has not been engaged in hostilities with some of the numerous and warlike Indian tribes who roam over the great interior plains, or occupy the Pacific slope of the Rocky Mountains.

In order to make the records of this office practically useful to the physician in civil life, and to render them subservient to the elucidation of the effects of climate in the causation and development of disease, it was necessary not only to present the vital statistics of the army in peace separate from those in war, but also to arrange the former in such manner as to render their comparison with the statistics of civil communities as free from objection as possible.

For this purpose, the statistics of troops on marches, or while engaged in warlike operations, have been excluded from the first division of this report; so that it presents as nearly as possible the diseases incident to soldiers in garrison, which must in a very great degree partake of the general characteristics of diseases affecting persons in civil life. It has not, however, been practicable to exclude those diseases which may have been contracted during a temporary tour of field service, but which were either developed at, or reported from, a permanent post; nor should it be concealed that diseases so contracted affect to a considerable degree all the statistics, but more particularly those of the stations on the Gulf coast of Florida, and on the Indian frontiers.

The general plan adopted in the report above referred to—that of considering the statistical and topographical details of the military posts in geographical divisions and subdivisions, having similar climatological features—has been followed; but instead of presenting the diseases of each post in a distinct abstract, it has been determined to consolidate the diseases of the several posts in each subdivision or region into one general abstract for that region.

Those abstracts have been compiled from the original “reports of sick and wounded,” which the medical officers are required to transmit to this office on the 31st of March, 30th of June, 30th of September, and 31st of December, annually. The arrangement of those reports in the classification and nomenclature of diseases is similar to that of the “Sanitary Report” of the British army; and as uniformity adds value to statistics, I have not hesitated to adopt such of the forms used in the admirable “Statistical Reports on the Sickness, Mortality, and Invaliding” in that army, as the difference in the nature of the two services and the general plan of this report permitted.

The elaborate medico-topographical reports which have been made in reply to your circular of April 30, 1852, are presented as written, and are duly credited to their respective authors. The only changes which have been made are those incident to editorial supervision, and the omission of certain tables which were rendered unnecessary by a change in the mode of presenting the statistics, adopted subsequent to the issue of the circular. The brief topographical descriptions, for which credit is given in a less distinctive form, are transcribed from the reports of sick and wounded; and those for which no credit is given, have been compiled from the observations of several medical officers. In the few instances in which no more recent information could be obtained, the topography has been copied from the statistical report published in 1840. The medical officers are designated by the rank which they held at the time their respective reports were written.

In connexion with the report on vital statistics, a portion of the annual summaries of observations on the winds and weather, and the consolidated temperature and rain tables, from the Army Meteorological Pegister, recently prepared by me under your direction, are respectfully submitted; and it is also suggested that the outline map, used for the illustration of that work, accompany this report, as it gives the true position of the military posts.

The second division of this report is devoted to the consideration of the vital statistics of the war with Mexico. Brief and imperfect as are the results there exhibited, they have been obtained only by long-continued and patient investigation. For this portion of the report, and also for the statistics respecting the recruiting service, I have to acknowledge my indebtedness to the labors of my predecessor, Assistant Surgeon Alexander S. Wotherspoon, who was engaged in the compilation of those statistics at the time of his death.

I have the honor to be, very respectfully, your obedient servant,

RICHD. H. COOLIDGE,

*Assistant Surgeon U. S. Army.*

Brevet Brig. Gen. TH. LAWSON,

*Surgeon General U. S. Army.*



# STATISTICAL REPORT

ON THE

## SICKNESS AND MORTALITY IN THE ARMY OF THE UNITED STATES.

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For the purposes of this Report, the military posts of the United States have been arranged in the following geographical divisions: the Northern Division, includes that portion of the United States which lies north of the fortieth degree of latitude, and east of the Rocky Mountains; the Middle Division, that portion lying between the thirty-fifth and fortieth parallels of latitude; the Southern Division, that between the thirtieth and thirty-fifth degrees of latitude. In addition to these, are the Divisions of Florida, Texas, New Mexico, California, and of Oregon and Washington Territories.

These principal divisions have been subdivided into regions, each distinguished by peculiar local or climatological features.





# NORTHERN DIVISION.

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## NORTH ATLANTIC REGION—COAST OF NEW ENGLAND.

THE military stations included in this region are six in number, extending from Eastport, Maine, to New London, Connecticut.

### FORT SULLIVAN.

Fort Sullivan, the most northern military post on the Atlantic coast, is situated on a rocky eminence on Moose Island, Passamaquoddy Bay, in the immediate vicinity of the town of Eastport, Maine. The island is about four miles long and two wide, having a rocky and sterile soil. Owing to its situation, and its proximity to the Bay of Fundy, the climate is damp, and fogs are frequent in the earlier summer months. The winters are cold, and, in this season, the thermal variations are often sudden; yet, more extreme cold is felt in the interior, on the main land, than on the island.

The quarters are of frame-work, to accommodate one company. The hospital, also of frame-work, is two stories high, with a portico to each story fronting the south. The dispensary, store-rooms, kitchen, and steward's and matron's quarters are on the ground floor. The wards, two in number, are on the second story, and accommodate twenty patients.

### FORT PREBLE.

This post is situated on the northern extremity of Cape Elizabeth, called Spring Point, from a remarkable spring at the base of the wall of the fort, a little above high-water mark. The land at the west of the fort rises to the height of fifteen or twenty feet; on the south, about a mile and a half distant, on the eastern extremity of the cape, is the Portland Head light. There is no stagnant water, or anything to render the post unhealthy, unless the chill north wind from the bay may have some effect in checking cutaneous action, or bringing on diarrhœa, coughs, and rheumatic affections, which seem to be the prevailing complaints.

### FORT CONSTITUTION.

This fort is located on a peninsula which forms the most eastern point of the State of New Hampshire, washed on the south by the Atlantic, and on the north by the Piscataqua river. It is at the entrance to the inner harbor of Portsmouth, between two and three miles from that town. The country adjacent is uneven and rocky. Some fresh and some salt marshes are found on Great Island, about half a mile distant. The hospital is situated without the fort, and so near the ocean that in violent easterly and southerly storms the spray beats against it.

### FORT INDEPENDENCE.

This fort is on Castle Island, in the harbor of Boston, three miles southeast from the State House, and nine miles from the entrance to Boston bay. The nearest land on the west is Dorchester Point, which is three-fourths of a mile distant. On the south is Thompson's Island,

distant one mile and a half; and one mile north is Governor's Island, overlooking and commanding Fort Independence. The island has a hard and gravelly soil: the tide ebbs and flows from ten to fourteen feet, and there are no stagnant waters in the vicinity.

#### FORT ADAMS.

This extensive fortification is situated on the island of Rhode Island, at the entrance of Narragansett bay, on a point of land called Brenton's Point, projecting toward the island of Conanicut, and forming one side of Newport harbor. The country around is of primary formation, with rocky elevations, and valleys susceptible of cultivation. The whole island is destitute of wood, except fruit-trees, and small groves, principally of oak, hickory, and maple. The climate is most salubrious: few diseases can be said to prevail here. "It is believed," says Surgeon R. S. Satterlee, "that had the troops proper barracks for their accommodation, and a comfortable hospital in which to receive and treat them when sick, the immunity from fatal disease would be without a parallel. We are, however, now subject to rheumatism, catarrh, pleurisy, diarrhoea, and also intermittent fever, all caused by the abominable bomb-proof quarters in which the troops stationed here are obliged to live."

#### FORT TRUMBULL.

Is on the right bank of the river Thames, one mile below New London, and two and a half miles from the shore of Long Island Sound. The position is rocky, and the drainage good. The river opposite the fort is about half a mile wide, and within the same distance from the fort are two small salt marshes. The soil of the surrounding country is rather sterile, presenting an undulating aspect, rising in prominent ridges of eighty or one hundred feet, with rock frequently breaking forth abruptly upon its surface.

#### DISEASES.

The only epidemic which has prevailed among the troops stationed in this region, during the period embraced in this report, is one of influenza (*catarrhus epidemicus*), which appearing on the 17th of June, 1843, at Fort Trumbull, extended to Fort Adams and Fort Preble in July following, though it does not appear to have affected the garrisons of Forts Constitution and Sullivan. Fort Independence was not then occupied.

The following remarks concerning this epidemic, as it occurred at Fort Trumbull, are copied from the report of Surgeon J. B. Porter: "It will be seen that the month of April was exceedingly healthy: May was also healthy, notwithstanding several cases of catarrh of a mild character. The first part of June was also healthy, but the last part quite the reverse. Epidemic catarrh (influenza) has been extremely prevalent during the last half of the month; all the cases of that disease reported, save one, having occurred since the 17th. During the prevalence of this epidemic the weather was remarkably pleasant. The disease usually made its attack without much warning, becoming fully developed in eight or twelve hours. *Symptoms*.—General pain or soreness; almost invariably pains of the frontal region and loins, and frequently of the chest and epigastrium; very generally soreness of the globe of the eye; pulse varying in frequency, but almost always wanting in volume; sometimes cough quite troublesome, and often little or none; skin never hot and dry, but generally inclined to be cold and moist, amounting in some instances to a cold perspiration; in many cases thirst, in others none at all; in some cases irritable stomach; and in all constipation. The disease was attended with considerable depression of the nervous power, and great derangement of the liver. *Treatment*.—Sometimes an emetic commenced the treatment, with obvious benefit. Generally



a dose of calomel, followed by divided doses of tart: ant:, pushed so as to produce one or two copious evacuations of bile from the stomach, caused a material improvement. Cupping in all cases where there appeared to be local determination, to the temples, cervical spine, chest, epigastrium, lumbar region, &c., was beneficial. Tamarind-water, the common drink. Although the complaint lasted in most cases only two or three days, it was followed by great debility of the digestive organs and the general system. Mild tonics were then useful. In no case was venesection indicated; on the contrary, it would have been injurious, and in many cases highly dangerous. The women and children of the post, and the workmen on the fortifications, were affected; and the complaint has been prevalent in the neighboring town of New London and the country around."

Surgeon Satterlee, at Fort Adams, reports: "Catarrh has been the prevailing disease this quarter. The cases mostly occurred in July, when almost the whole command was affected by it in some degree. It began with cough, pains in chest and head, sickness at the stomach, bilious coated tongue, and sometimes fever, but not always. The treatment adopted was to cleanse the stomach and bowels by a dose of ten grains of calomel and six grains of Dover's powder, followed, in four hours, by thirty grains of pulv: ipecacuanhæ, which quickly broke up the disease, when a Dover's powder at night, and the warm foot-bath, procured sleep and perspiration, and the patients recovered. Great benefit was also derived from cool sea-bathing. In some instances bleeding and cupping were necessary at the commencement of the treatment."

The principal diseases, and causes of death among the troops stationed in this region, are exhibited in abstract No. 1. for this division. It is not proposed to enter into a minute analysis of that general abstract, but only to present those main features which are necessary to a comparative analysis of the abstracts from the several regions, with the view of showing the relative frequency of certain classes of diseases in different climates. For this purpose summaries will be given of fevers: of diseases of the organs connected with the digestive system: and of diseases of the respiratory system.

The following table, compiled from the abstract for this region, shows the aggregate mean strength of the forces, the number of cases of sickness treated, the deaths, and the ratio of cases and deaths for 1,000 of mean strength.

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	3,927	1,537	10	391	2.5
Second quarter.....	4,096	1,774	9	433	2.2
Third quarter.....	4,037	2,203	10	545	2.4
Fourth quarter.....	3,794	1,421	7	374	1.8
Annual ratio.....	3,963	6,935	36	1,749	9.0

It will be perceived from the foregoing data that the average annual proportion of cases of disease in this region to the number of officers and men was 1.75 to 1: that the ratio of deaths to the number of troops was 1 in 110, or 0.9 per cent.; and that the proportion of deaths to the number of cases treated was 1 to 192.64, or 0.52 per cent.

It is proper to remark in this connexion, that all cases of indisposition sufficient to render the soldier even temporarily unfit for duty are included in the surgeon's report of sick. The

relative proportion of cases treated to the number of men, is greater therefore, in the army than would be the case in persons in civil life similarly located, because the motives to exertion on the part of individuals are more controlling with them than with soldiers.

## FEVERS.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	3, 927		4, 096		4, 037		3, 794		3, 963			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris continua communis. ....	14	0	10	0	10	0	8	0	42	0	0 in 42	10
Febris intermittens quotidiana. ....	18	0	32	0	23	0	26	0	99	0	0 in 99	25
Febris intermittens tertiana. ....	45	0	70	0	36	0	44	0	195	0	0 in 195	49
Febris intermittens quartana. ....	1	0	5	0	3	0	2	0	11	0	0 in 11	3
Febris remittens -----	39	0	31	0	15	0	2	0	87	0	0 in 87	22
Febris typhus -----	3	1	8	0	4	0	5	1	20	2	1 in 10	5
Febris typhus icterodes. ....	0	0	0	0	0	0	0	0	0	0	0 in 0	0
Total -----	120	1	156	0	91	0	87	1	454	2	1 in 227	114

NOTE.—In this, and all similar tables, decimal quantities will generally be omitted, and the nearest whole number recorded.

It is believed that this table, and those of the same form which follow, are sufficiently comprehensive not to require a statement in detail of the facts presented. Unless, therefore, the statistical results are calculated to lead to erroneous conclusions, no special analysis will be given; nor will any attempt be made to explain or reconcile anomalous results, unless the means for so doing are found in the original records.

In the present instance some comment is necessary, as it appears from the table that intermittent and remittent fevers are not uncommon in this region, a result not to be expected from the medical topography of the stations, and one, too, at variance with a previously published report.\* On examining the abstract, it will be seen that fevers of intermittent and remittent types prevailed principally during the first, second, and third quarters of 1849; in the fourth quarter of 1850, and in the first three quarters of 1851 and of 1854. Turning to the original reports, it is ascertained that in 1849 these diseases occurred in men who had recently served in Mexico; and in 1850, 1851, and 1854, in troops transferred from Florida to Forts Adams and Independence. The medical officers report that those diseases did not originate at these posts; and the remark of Assistant Surgeon Sargent, that “in thirty-three years’ practice at Fort Constitution, he had known but one case of intermittent fever which was not of foreign origin,” will, as a general rule, apply to all the military stations on the coast of New England.

An examination of the abstract will suffice to show the certainty with which the liability to attacks of intermittent yields to the influence of a residence in this region, though the fact is more conclusively demonstrated by the original reports. The troops from Mexico reached the New England stations in September, 1848, and in the following month intermittents are reported, disappearing almost entirely within the succeeding twelve months. In December, 1850, troops arrived from Florida, bringing with them this class of fevers, which were eradicated within the following year.

ERUPTIVE FEVERS have been so rare as not to require special notice.

\* Statistical Report on the Sickness and Mortality in the Army of the United States. Prepared under the direction of Thomas Lawson, M. D., Surgeon General, by Assistant Surgeon Samuel Forry, M. D.: Washington, 1840.



## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	3,927		4,096		4,037		3,794		3,963			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica -----	0	0	0	0	0	0	0	0	0	0	0	0
Diarrhœa -----	81	2	94	1	265	0	69	0	509	3	1 in 170	128
Dysentæria acuta -----	24	0	32	0	175	1	53	0	284	1	1 in 284	72
Dysentæria chronica -----	15	0	13	0	12	0	7	0	47	0	0 in 47	12
Enteritis -----	0	0	0	0	1	1	0	0	1	1	1 in 1	0.25
Hepatitis acuta -----	1	0	1	0	0	0	1	0	3	0	0 in 3	0.75
Hepatitis chronica -----	1	0	4	0	3	0	0	0	8	0	0 in 8	2
Obstipatio -----	19	0	30	0	67	0	27	0	143	0	0 in 143	36
All other diseases of the Digestive System -----	84	0	119	0	233	1	118	3	554	4	1 in 138	14
Total -----	225	2	293	1	756	3	275	3	1,549	9	1 in 172	390.8

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength .....	3,927		4,096		4,037		3,794		3,963				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Bronchitis acuta et chronica.....	12	0	16	0	5	0	16	0	49	0	0 in 49	12	
Catarrhus .....	351	1	254	0	264	0	228	0	1,097	1	1 in 1097	277	
Phthisis pulmonalis.....	7	0	6	2	1	2	5	1	19	5	1 in 4	4.8	
Pleuritis .....	33	1	30	0	21	0	23	0	107	1	1 in 107	27	
Pneumonia .....	18	0	14	0	4	0	8	0	44	0	0 in 44	11	
All other diseases of the Re- spiratory System .....	9	1	12	0	11	0	8	0	40	1	1 in 40	10	
Total .....	430	3	332	2	306	2	288	1	1,356	8	1 in 169	342	
Rheumatismus .....	62	0	90	0	83	0	103	0	338	0	0 in 338	85	

For the meteorology of this region, as well as for that of all the military posts, the reader is referred to the series of consolidated temperature and rain tables, and to the annual summaries of observations on the weather, to be found in another portion of this report. Those tables exhibit the more important results of a system of observations commenced by the Medical Bureau in 1819, and which has been continued with varied modifications and improvements up to the present time.\*

\* For more copious and extended meteorological tables, reference is made to the series of Army Meteorological Registers, published under the direction of the Surgeon General in 1826, 1840, 1851, and 1855.

## NORTH ATLANTIC REGION—NEW YORK HARBOR.

In the "Statistical Report on the Sickness and Mortality in the Army of the United States," heretofore cited, the stations in the harbor of New York were included in the class of New England posts. A departure from that classification has been judged advisable, for the reason that all recruits enlisted in the city of New York, and those also from the whole Atlantic seaboard, are sent to those posts for re-inspection and instruction, preparatory to their distribution to the several regiments and corps of the army. The climatic influences here differ sensibly from those which obtain on the coast of New England, and this affords an additional reason for the course now pursued.

Three posts in this harbor have been occupied by troops: Fort Columbus, Fort Wood, and Fort Hamilton.

## MEDICAL TOPOGRAPHY AND DISEASES OF FORT COLUMBUS.

By Surgeon S. G. I. De Camp: 1853.

Fort Columbus is situated on Governor's Island, harbor of New York, in latitude  $40^{\circ} 42'$ ; longitude  $74^{\circ} 1'$ . Altitude above sea, 23 feet.

The island contains about seventy-five acres, having the Hudson river on the west, and the East river on the east side of it. It is about twenty miles distant from the ocean at Sandy Hook, which is in a southwesterly direction: from New York about one mile, and from the city of Brooklyn six hundred yards. The drainage is good, from the natural slope of the ground. The soil is a sandy loam. The rock on the border of the island is gneiss. The well-water is not good, as it is brackish; there are several large cisterns upon the island, but not of sufficient capacity to furnish a supply of good water when the fort is fully garrisoned.\* Such has been the case during the last summer; and the consequence was, that diarrhœa and other affections of the bowels have been common, having for their cause, to a considerable extent, the general use of well-water. Assistant Surgeon J. Simpson, who is on duty at Fort Wood, Bedloe's Island, where the same quality of water is found, informs me that, while the well-water was used, the same character of disease prevailed there; but that when Croton water from New York was furnished the troops in consequence of the failure of the wells, the disease entirely disappeared. It is a well-established fact, that the ratio of disease and death has been greatly diminished in the city of New York since the introduction of Croton water into that city.

Intermittent and remittent fevers have been common on the island during the past summer, especially among women and children: and more especially so, among those who have occupied buildings known as "Rotten Row." These buildings have not been considered suitable quarters for soldiers for many years, and have been mostly occupied by the hangers-on of the army as temporary residences, without any proper regard for policy, till it has become a nuisance. I think the recent improvement in the lower part of Brooklyn has contributed considerably in causing fever on this island. Streets are being formed over an extensive marsh, which prevent the ingress and egress of the tide, and favor the accumulation of fresh water into stagnant ponds and pools; and as the same character of disease prevailed in that immediate neighborhood, I infer the identity of cause here.

In the treatment of DIARRHŒA among soldiers, I have been successful by free purgation with saline cathartics, which, with abstinence and a recumbent posture, seldom fail to cure the patient in a short time; but when other remedies have been found necessary, opium with cam-

\* In 1840, Assistant Surgeon Joseph P. Russell reported that, "exclusive of ten large cisterns capable of containing many thousand gallons, this post is abundantly supplied from five wells, with excellent water, holding in solution but small portions of saline or earthy matter." Surgeon De Camp's report was written in 1853. It appears, therefore, that the water in the wells became gradually brackish.



phor, or the compound syrup of rhubarb with tannin, generally succeeds. Recruits are more subject to that complaint than old soldiers. Taken as they often are from the more humble walks of life, where they have not been regularly supplied with food and other comforts, repletion soon follows enlistment, and an engorgement of the mucous membrane of the intestines takes place, producing diarrhœa or other more fatal maladies; hence the good results from unloading the vessels by cathartic medicines.

I cannot let the present occasion pass without bearing testimony to the value of sulphate of quinine, and arsenic, and other remedies of that class, in the treatment of disease extending to a range far beyond what was once supposed. The intermittent character of disease would seem to be more extensive than some imagine. I am indebted to Doctor Dickson's Chrono-Thermal System of Medicine for the views which I now entertain upon this subject, and can speak with confidence of the value of these remedies in rheumatism, asthma, continued fever, and some spasmodic affections in children, and in many cases of an anomalous character, the pathology of which is little understood.

There are fashions in physic as well as fallacies; there was a time when no one would be thought so rash as to treat pneumonia or pleuritis without copious and repeated bleeding, and that such a course will relieve the patient is not doubted; but experience has shown that the same result may be obtained by remedies less injurious to the sick. The tartrate of antimony and potash is well known to possess the power of controlling, to a considerable degree, those complaints; and when employed to an extent which may be done with safety, will do away with the use of the lancet in many cases. This has been the course which I have pursued, and with satisfactory results. I have made some use of prussic acid in the cases alluded to, with happy effect.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT WOOD.

By Assistant Surgeon Josiah Simpson: 1852.

Fort Wood is situated on Bedloe's Island, in the harbor of New York, in latitude  $40^{\circ} 41' 18''$ , longitude  $74^{\circ} 11'$ . It is about two and a half miles southwest of the city of New York, the same distance from the nearest point of Long Island, about two miles from the New Jersey shore, and eighteen miles distant from the ocean. The whole island comprises an area of eight or nine acres: the most elevated portion, that on which the fort stands, is about 30 feet above high-water mark.

The soil is a sandy loam based upon a stratum of clay. The slope from the entrance of the fort to the north point of the island is covered with shade-trees of willow, sycamore, ash, acacia, and others, which have been brought and planted here. There are no trees of a native growth on the island.

Outside of the fort are two wells which formerly afforded an ample supply of water for the garrison; but during the past summer these failed, and since that time the troops have been dependent on Croton water, brought from the city of New York. This spring, two cisterns have been built inside of the work, large enough, when filled, to supply the wants of the command.

The quarters for officers and soldiers are of brick, and occupy three sides of a square within the work; the enclosed area is about 107 feet square. The officers' quarters, of which there are three sets, are two stories, with a basement, and on the north side of the work. The barrack-rooms for the men, on the east and west sides, are two stories high: the eastern one having a basement kitchen, and mess-room running its whole length. The quarters are well ventilated, and comfortable in other respects.

The hospital, a new brick building on the northeast side of the island, was put up during the last summer, and first occupied in September last. It is nearly square—49 by 40 feet—two stories and a basement in height. The basement, which is of granite, is entirely above ground,

and has a hall running its whole length, with a surgeon's room, dispensary, and steward's room on one side, a mess-room and kitchen on the other. The first story has two wards on each side of the hall, with a water-closet and bath-room at the end of the same. In the second story there are three small wards one side of the hall; on the other, two, with a water-closet, bath-room, and store-room between; and at the end, a small room large enough for one bed. The building will accommodate from 35 to 40 patients. The wards are well ventilated, having ventilators over the doors, and ventilating flues running up the chimneys, distinct from the smoke flues. The kitchen is furnished with a range and boiler, and hot and cold water is carried into the dispensary and bath-rooms. Under the flooring of each story, and between the roof and ceiling, there is a deafening of three inches of mortar; this, independently of destroying the sound of footsteps, renders the building cool in summer and warm in winter.

There are other buildings on the northwest side of the island, occupied by laundresses and others; these, however, are of a temporary character.

The country to the north and west, on the New Jersey side, is flat and level, and at the distance of some four or five miles are extensive salt marshes, which have not, as far as I am able to judge, any injurious effect on the health of the post. The country to the south and east, on Staten Island and Long Island shore, is rolling, and free from marshes. The prevailing winds are from the south and southwest in summer, and from the northeast and west in winter.

The principal diseases during the winter and spring are those of the respiratory organs, and fibrous and muscular tissues. During the summer and fall months, diseases of the digestive organs prevail to a greater extent at this post, owing to the fact, that the men are all recruits, and more liable to such diseases in the transit from civil to military life. A large number of them also are foreigners, recently arrived from an entirely different climate, often after long passages in crowded and badly ventilated vessels; these are very liable, on their arrival at the island, to severe attacks of remittent and typhoid fevers, as well as diarrhoeas and dysenteries.

This post has a great advantage over most others as a depot for recruits, from its perfect isolation, its freedom from malarious influences, and also from that bane of all military as well as civil establishments, spirituous liquors. The advantage afforded during the summer months, for salt-water bathing, contributes greatly to the health and cleanliness of the command.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT HAMILTON.

By Assistant Surgeon Joseph Eaton: 1852.

Fort Hamilton is situated at the southwest corner of Long Island, in the town of New Utrecht, King's county, New York; having the North river on the west, and the Atlantic ocean on the south, in latitude  $40^{\circ} 43' N.$ , and longitude  $74^{\circ} 1' W.$  Its elevation above the level of the ocean is forty-five feet.

Fort Hamilton is about six miles nearly due south from the city of New York, and nothing separates it from the broad Atlantic on the southeast but a long sand-bar of a few rods in width, running from S.E. to N.W. about three miles, called "Coney Island." It may, therefore, be considered as being subject to, and affected by, all the influences of the ocean.

There is a spacious bay (Maritime bay) which extends along the southern shore of Staten Island, westwardly to the Jersey shore, about twenty miles. The same bay extends southerly about fifteen miles, to Sandy Hook.

It can readily be imagined, therefore, how great must be the influence of the ocean and bays on this location; and it must, of course, be apparent how often vicissitudes take place in the temperature of the air, and in the course of the winds. The wind sometimes changes here twenty times in a day; and it is not uncommon to see upon the water two vessels, not far distant from each other, sailing in opposite directions, and both directly before the wind.

In warm weather, in summer, when the sun has rarefied the air over the land, at about 10 or 11 o'clock, A. M., the dense air from the ocean rushes in, and introduces a cool and refreshing breeze.



The frequent and sudden changes in temperature do not appear to affect, injuriously, the young and vigorous who enjoy sound health: but are decidedly prejudicial to invalids, and particularly those affected with pulmonary and rheumatic complaints. The humidity of the atmosphere and its variableness of temperature render it less conducive to health and longevity than if it were more uniform, and less liable to great and sudden changes.

The temperature of the ocean is said to be eight or ten degrees colder than the land in summer, and about the same degrees warmer in the winter. The air from the sea, therefore, has a powerful effect on the climate.

The geological construction of the land in the vicinity of Fort Hamilton renders the topography remarkably singular.

From this post toward Brooklyn, along the North river, the land is generally uneven and undulatory, and there are numerous depressions which have the appearance of artificial excavations; they are generally four or five rods in diameter, and some of them are very deep, and never dry. More than fifty, I presume, of these depressions might be counted between this post and Greenwood Cemetery, about four miles north of this. It can be readily conceived that these numerous stagnant pools, at particular seasons of the year, may affect injuriously the health of the inhabitants in the immediate vicinity.

This formation is peculiar to the western end of Long Island: the undulations of the land extend eastwardly about four miles, to Flatbush, Gravesend, and Flatlands, which towns present almost a dead level.

The soil about here is generally a clayey loam: some places are sandy. On the western end of Long Island, which I have described, there are no brooks or small streams, and no springs of water in the land; and, on sinking wells, no water is obtained until arriving at the level of tide-water: in consequence, some wells on elevated ground are one hundred feet deep, or more. The well-water is impregnated with salts of lime, which renders it unfit for washing, but it is a good and wholesome beverage.

Eastward of Fort Hamilton, at the distance of half a mile, and extending from the sea-shore to the distance of one mile northerly, and a quarter of a mile in width, is a low bog or quagmire, called by the Dutch inhabitants "dyker:" it receives the surface water from the high lands in the vicinity: and being separated from the sea by a sandy beach only, in violent storms the sea makes a fair breach over the sand, mingling the salt water with the fresh, and, there being no permanent outlet, the retained water becomes stagnant and putrid. It must be readily conceived that this is a fruitful source of disease, and in some locations in the immediate vicinity, to the leeward of the prevailing winds (S.E. almost every day in the summer), no persons can reside without exposing themselves to certain and inevitable sickness. There are other low and swampy lands in the immediate vicinity of Fort Hamilton, the more perfect drainage of which would contribute much to the health of this location.

On the sand-beach which I have mentioned above, the British army, under the command of Sir William Howe, landed on the 22d of August, 1776, and soon advanced toward Brooklyn. The disastrous battle of Long Island was fought on the 27th of the same month.

There are indications of great geological changes having taken place on Long Island. The stones on the surface in this vicinity bear the same rounded form as those on the sea-shore. Logs of wood and shells are frequently found in digging wells, and in other excavations, from twenty to forty, and, in some places, more than one hundred feet below the surface.

In sinking wells here, a clayey mixture extends to about twenty feet, when a coarse sand is found, like that on the sea-shore, containing rounded stones and pebbles. In some places the bottom of wells, at about 40 or 50 feet, is characterized like the flats or marshes: and in one instance within my knowledge, near Fort Hamilton, a well, after being stoned, was entirely destroyed, the whole wall sunk and disappeared. Appearances, on investigation, go to show that the greater part, if not the whole of Long Island, is alluvial.

Near Fort Hamilton the ledges and boulders are formed of green-stone (serpentine), granite,

and gneiss. The land is mostly cleared and cultivated. The natural growth appears to have been oak, hickory, chestnut, birch, cedar, cypress, maple, elm, and sycamore. The soil is extremely variable: four-fifths of the surface are said to be characterized by the term of sandy loam; some places contain a stiff clay, and others a pure sand.

The diseases that mostly prevail at this post, are intermittent and bilious fevers. Fevers of the typhoid type, as far as I have any knowledge, are uncommon. Diarrhœa and dysentery sometimes prevail. The ordinary remedies are generally found efficient in the treatment of the diseases mentioned.

The quarters at this post for officers and soldiers, and for hospital purposes, are, most unfortunately, casemates: and I have had full and ample experience to know, having felt the effects myself, that the dampness, which, from philosophical and chemical principles, can never be entirely prevented by any expenditure of money without artificial heat, must be prejudicial to health. The deleterious effects from administering mercurial remedies to patients in casemates, at this post, have been frequently and fully reported.

There is no hospital building at this post; and since I have been stationed here, great suffering and many deaths of soldiers have taken place for the want of hospital accommodations.

The 2d regiment of infantry, while here in the fall of 1848, preparing to embark for California, having just returned from a campaign in Mexico, and having of course suffered from great fatigue and exposure, were deprived of the necessary hospital accommodations here, which their peculiar situation and condition imperiously required. For want of hospital and other room, many of the sick were exposed in the large horse-stable, without fire, in the month of November; and I have the impression that as many as twenty or thirty died while in this harbor before the regiment embarked. The regiment was attended by the medical officers who were with it in Mexico.

In my opinion, it is a subject of the highest importance, in a military point of view, to make ample provision for the accommodation and comfort of the sick at this important military post, where, in case of any warlike emergency, a large body of troops must of necessity be assembled.

## DISEASES.

The following table, compiled from abstract No. 2, of this division, gives the amount and ratio of sickness and mortality among the forces stationed in the harbor of New York.

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	8,806	6,076	50	690	5.6
Second quarter.....	8,986	7,274	35	809	4
Third quarter.....	10,402	11,805	80	1,134	7.6
Fourth quarter.....	9,353	6,317	47	675	5
Annual ratio.....	9,387	31,472	212	3,353	22.5
Exclusive of cholera.....		31,397	183	3,345	19.5

The average annual proportion of cases of disease to the number of officers and men was 3.35 to 1: the ratio of deaths to the strength of the command was 1 in 44, or 2.25 per cent.;



and the proportion of deaths to the number of cases treated was 1 in 148.45, or 0.67 per cent. Exclusive of deaths from cholera, the mortality was 1 in 51, or 1.9 per cent.

## FEVERS.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.	
Strength .....	8,806		8,986		10,402		9,353		9,387					
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.				
Febris continua communis....	4	0	10	0	12	0	5	0	31	0	0 in 31	3		
Febris intermittens quotidiana	69	0	122	0	181	0	114	0	486	0	0 in 486	51		
Febris intermittens tertiana	226	0	342	0	390	0	310	0	1,268	0	0 in 1,268	135		
Febris intermittens quartana	4	0	19	0	73	0	0	0	96	0	0 in 96	10		
Febris remittens .....	37	0	42	2	75	5	65	3	219	10	1 in 22	23		
Febris typhus.....	9	5	11	2	8	1	6	7	34	15	1 in 2+	4		
Febris typhus icterodes.....	0	0	0	0	0	0	0	0	0	0	0 in 0	0		
Total .....	349	5	546	4	739	6	500	10	2,134	25	1 in 85	227.3		

Respecting intermittent fever at Fort Hamilton, Assistant Surgeon Eaton reports on the 31st of March, 1844, that no case had occurred "since the great rain of the 21st and 22d of August last, which flooded the whole country, and apparently carried away all decayed and putrid matter which caused malaria." The force of this statement is, however, very materially modified by a preceding report from the same officer, which states that on the 30th of August, 1843, immediately after the heavy rains referred to, the garrison was entirely changed, the fort being occupied by troops from Fort Adams, where, as has already been shown, intermittents are not endemic. The prevalence of this class of diseases at Fort Hamilton in the fourth quarter of 1850, and first quarter of 1851, is attributed to the arrival of troops from a sickly post in Florida in November. In March following, the health of those troops is reported good.

The thirty-one cases of remittent fever reported in the third quarter of 1851, (see abstract,) occurred at Fort Wood. Assistant Surgeon J. Simpson reports that "fevers of a remittent type, and bowel affections, have been prevalent. The fevers in nearly every instance assumed a typhous character from the commencement. The tongue has been dry, dark, and contracted, with sordes about the teeth and gums; the secretions from the skin and other organs generally deficient; alvine evacuations dark. Many of the cases have presented severe cerebral symptoms. The treatment pursued in most cases, and which appeared to have the greatest control over the disease, was, commencing with an emetic of ipecacuanha, and following with small doses of the same combined with calomel, until the system became slightly under its influence. As soon as this was the case, there appeared to be an improvement of the symptoms: the secretions were unlocked; the tongue showed a disposition to clean; there was a general lessening of the frequency of the pulse, heat of skin, and cerebral excitement. Gentle stimulation with carbonate of ammonia, infusion of serpentaria, or some other mild stimulant, was then resorted to." Of these 31 cases, 5 died.

ERUPTIVE FEVERS are of more frequent occurrence at the stations now under consideration than at other military posts, owing to their being garrisoned principally by recruits, among whom measles are not uncommon, and who are sometimes attacked with smallpox before time is afforded for vaccination. The regulations for the medical department of the army do not enjoin a uniform system of re-vaccination; they prescribe that, "as soon as a recruit joins any

regiment or station, he shall be examined by the medical officer, and vaccinated when it is required." On referring to the abstract, it will be seen that 25 cases of rubella are reported, and 1 death; 25 cases of variola, and 5 deaths; and 14 cases of varioloid, all terminating favorably.

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	8,806		8,986		10,402		9,353		9,387			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica -----	0	0	3	1	71	28	1	0	75	29	1 in 2.6	
Diarrhoea -----	376	7	692	0	3293	5	806	6	5167	18	1 in 287	550
Dysentery acuta -----	48	1	45	1	471	7	207	4	771	13	1 in 59	82
Dysentery chronica -----	3	1	8	1	18	5	11	2	40	9	1 in 4.4	4
Enteritis -----	1	0	4	0	2	0	0	0	7	0	0 in 7	0.7
Hepatitis acuta -----	3	0	3	1	3	0	0	0	9	1	1 in 9	0.9
Hepatitis chronica -----	0	1	1	0	1	0	3	0	5	1	1 in 5	0.5
Obstipatio -----	189	0	367	1	566	0	241	0	1363	1	1 in 1363	145
All other diseases of this system -----	347	0	356	0	429	0	228	3	1360	3	1 in 453	145
Total -----	967	10	1479	5	4854	45	1497	15	8797	75	1 in 117	937
Total exclusive of cholera -----									8722	46	1 in 190	929

In the third quarter of 1849, the Asiatic cholera appeared at Fort Columbus, 7 cases being reported in July, and 12 in August. Of these 19 cases, 15 proved fatal. The post was then temporarily attended by a citizen physician, who did not make a special report. This disease again appeared on the 11th of August, 1852, six cases occurring that month, 4 of which died. In the treatment, Surgeon De Camp relied upon calomel, camphor, opium, sinapisms, external warmth, and stimulants. In one of the cases which recovered, twelve grains of calomel were given every two hours during the night, commencing at 8, P. M., and on the return of the vomiting next day, thirty grains of calomel with ten grains of camphor were given at one dose. In July, 1853, the same surgeon reports two cases of cholera, both terminating in recovery. The remedies were "large doses of calomel and camphor, and external heat by means of bags of hot water."

Assistant Surgeon Edward W. Johns reports that "the cholera made its appearance at Fort Columbus on the 1st July, 1854. Of the 38 cases reported in that month, 30 were restricted to choleraic diarrhœa, and 8 went into extreme collapse. The treatment, at first, was by calomel and camphor, and occasionally opium, in doses of ten grains of the former, and five of camphor, every two hours. In the later cases the dose was increased to thirty grains. During this period, diseases of the bowels were prevalent and urgent in their nature. In the month of August the epidemic disappeared, and the health of the command was very good until about the middle of September, when diarrhœa was observed to increase and become more troublesome in its nature. On the 23d of September, cholera again re-appeared, and two cases were received into hospital. On the 24th, three more cases were received, and one on the 25th—in all, six cases. In none could any cause other than atmospheric change be traced, and in each the disease was suddenly developed, the patients being received into hospital with commencing



collapse, which in five cases became fully established; but, with the exception of the sudden accession of collapse, and the comparatively less apparent frequency of the rice-water discharges, the re-appearance of the disease presented no new point for observation. In each case, one hundred and thirty grains of calomel and forty grains of camphor were administered in the course of eight hours; and as soon as reaction appeared, the calomel was kept up until it was established, in doses of one grain every hour. In addition to the internal remedies, external heat and friction were sedulously resorted to. Of the two fatal cases, one died in six hours, and the other, after recovering from the collapse, and for two days apparently improving, finally sank from debility, which resisted all measures for support. In the treatment of cholera, opium was but little used, as, in addition to its appearing to possess but little efficacy in restraining the discharges, or in quieting spasmodic muscular action, the quantity necessary to be given to produce any decided effect, seems to interfere seriously with the proper action of the brain and nervous system, whose every energy is required for recovery from the collapse."

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	8,806		8,986		10,402		9,353		9,387			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica ..	23	1	62	0	10	1	22	1	117	3	1 in 39	12.4
Catarrhus -----	1700	0	1100	0	802	0	1185	1	4787	1	1 in 4787	509.9
Phthisis pulmonalis -----	9	8	15	8	24	8	8	11	56	35	1 in 1.6	5.9
Pleuritis -----	41	2	18	1	12	0	13	0	84	3	1 in 28	9
Pneumonia -----	50	7	20	4	6	1	13	1	89	13	1 in 7	9.3
All other diseases of this system -----	12	0	14	2	10	2	16	0	52	4	1 in 13	5.5
Total -----	1835	18	1229	15	864	12	1257	14	5185	59	1 in 88	552
Rheumatismus -----	194	1	275	0	283	0	260	0	1012	1	1 in 1012	107.8

Assistant Surgeon J. P. Russell, in his report for the second quarter of 1843, notes the appearance of epidemic catarrh at Fort Columbus about the 11th of June. "The epidemic attained its height about the 16th or 17th, when nearly one-third of all the people in the garrison (men, women, and children) became more or less severely afflicted; many of the cases were extremely severe, and required free venesection and active antiphlogistic treatment to prevent inflammation and congestion of the lungs." This epidemic also appeared at Fort Hamilton in June, 1843, where some cases were so severe as to require bleeding.

## NORTH INTERIOR REGION—EAST OF THE GREAT LAKES.

This class embraces those stations of the northern division which are situated between the Great Lakes and the Atlantic ocean, and so far removed from either, as not to be influenced by those large bodies of water. The stations occupied are six in number: Fort Kent, Fort Fairfield, Hancock Barracks, Plattsburg Barracks, Watervliet Arsenal, and West Point.

## MEDICAL TOPOGRAPHY AND DISEASES OF FORT KENT.

By Assistant Surgeon Alexander S. Wotherspoon : 1845.

Fort Kent is situated in the most northern part of the State of Maine, at the junction of the Fish river with the St. John's, in latitude  $47^{\circ} 15' N.$ , longitude  $68^{\circ} 38' W.$  In a direct line, it is about 60 miles distant from the St. Lawrence, and 180 from the sea, above which it is elevated 556 feet. The St. John's, opposite the fort, is about  $\frac{1}{4}$  of a mile in width; and during summer, when not swollen by heavy rains, is full of bars and rapids, so as to be only navigable by light wooden and birch canoes, or by small flat-boats, towed by horses along the shore. The Fish river, a rapid stream of some size, is the outlet of the large Eagle Lakes, and is said to carry off the surplus water of some 200 square miles of surface. The whole country is intersected by chains of hills, running from W. to E., of a height varying from 200 to 600 feet above the level of the river; the valleys between them being occupied by rapid streams, or lakes of variable size.

The barracks and officers' quarters are situated upon a level plain, 40 feet above the river, extending back in a southerly direction to the foot of the hills, a distance of a quarter of a mile. The soil is a light loam, which rests upon a stratum of gravel and pebbles. On passing through this, is found a bed of tough blue clay, reposing upon an argillaceous slate rock. This slate is found cropping out in large masses on the side-hills, and extends on the south to the valley of the Aroostook, where a transition limestone, with trilobites and other fossils, takes its place. In consequence of its geological formation, the drainage of the land is excellent, and numerous springs of fine water are found in every direction. With the exception of the immediate bank of the St. John's, and a few scattered farms on the road which connects the settlement with the military road at Wattawamkeag, the whole country is still covered by a dense, unbroken forest. The harder woods, different varieties of the maple, beech, birch, and ash, are found on the more elevated and the more rocky soil, while the lower grounds are occupied by the spruce, fir, larch, and cypress. The white and yellow pines, which produce the fine lumber, the staple of the country, are found scattered through the forest, generally more or less isolated and distant from each other. Large elms are generally seen on the interval lands; the generality of the forest-trees, however, with the exception of the pines, are of a rather diminutive size.

There is very little game in the immediate vicinity of the fort: occasionally moose, cariboo, and deer are seen; but these animals are said to be fast deserting the country. Two species of wolf, the loup cervis, bear, and glutton, are sometimes shot or taken in traps; and a few beaver, otter, sable, and mink skins, are brought for sale by the hunters. Wild pigeons, partridges, and ducks are found in inconsiderable numbers. The river and lakes are, however, well stocked with trout, togue, and other fine fish. During the summer months the insects are very numerous, and very annoying. Mosquitoes appear in immense numbers, often before the snow has left the woods; a species of sand-fly, called by the Indians "*no see 'ems*," are also very troublesome: but the most venomous of all, is the "black fly," an insect of a dark-colored body and grey limbs, about one-fourth the size of the ordinary house-fly. This little insect perforates the skin without causing pain, leaving a small, red, circular mark, generally found covered with a clot of hardened blood. In a short time the integument around the puncture swells, hardens, and itches intolerably. These small tumors remain for two or three days, gradually disappearing, and occasionally leaving a small scar. When the bites are numerous, and the person attacked of an irritable temperament, the face and hands become severely inflamed and swollen, with oedema of the eyelids, and febrile symptoms of some intensity. The application of the aqua ammoniæ to the bite allays the itching, and prevents much of the subsequent inflammation. The only possible method of remaining in the woods during a warm, clear day, is to smear the exposed surfaces with some oily and odoriferous substance, such as oil of camphor.



The climate, at this post, is almost Siberian in its rigor: the mean temperature for the year ending June, 1845, being 35.90. The long, dreary winter commences during the last weeks in October, when repeated falls of snow cover the ground, to remain unmelted until the succeeding spring. The St. John's is generally frozen across by the last of November; some of the largest rapids remain open until the middle of December. From November to the last of March, the thermometer, every clear night, falls below zero; and in January and February the mercury is sometimes frozen in the bulb. This phenomenon was twice witnessed during the month of February, 1845. Fortunately, during the intensely cold weather of mid-winter, the atmosphere is perfectly calm, and the woodsmen are able to work in the open air without injury. Indeed, the number of those who suffer from exposure is wonderfully few—no doubt, in some measure, owing to the precautions they take to defend themselves from the cold. A lumberman always wears from two to three thick red flannel shirts, a species of woolen blouse or loose jacket, a couple of pairs of drawers with overalls, generally three or four pairs of woolen socks, and a huge pair of cowhide boots. The snow, which by the middle of March is often five or six feet deep, begins to melt by the last of that month; disappearing from the open fields by the middle of April, but often remaining in the woods until after the 1st of June. The rivers generally open from the 15th to the 30th of April, the lakes remaining frozen some two or three weeks longer. Immediately on the breaking up of the river ice, the spring freshets commence; the rivers remaining swollen until the snow in the forest is completely melted. A second, called the June freshet, sometimes succeeds the heavy rains which are usually looked for in that month. Killing frosts are generally experienced through the month of May. On the 4th of June, 1844, ice one-third of an inch in thickness was seen. The last killing frost in 1845 occurred on the 31st of May. White frosts occur repeatedly during the summer months, and the thermometer, on a clear night with a northerly wind, sinks to 34° or 33°. These frosts very seldom injure even the most tender garden vegetables. The transition from winter to summer is very sudden; the trees put forth their foliage, and the various plants spring up with singular rapidity. I have repeatedly, in the woods, found flowers in full bloom, by the side of masses of the yet unmelted snow. The snow covers the ground so early in the fall, that the earth is rarely frozen to any depth, so that immediately upon its disappearance, agricultural operations can be commenced, though, owing to the coldness of the season, very little planting is done before the 1st of June. The first swallows make their appearance during the last week of May. I found the *acer rubrum* (red maple) in bloom on the 16th of May, the *aronia latifolia* (shad bush) on the 23d, the *betula populifolia* (birch) on the 7th, and the *sorbus Americana* (mountain ash) on the 26th of June. The *fragaria Canadensis* (the wild strawberry) is generally in blossom by the 1st of June, and the first ripe berries are found during the first week in July. Occasionally, during the summer months, when southerly or southwesterly winds prevail for two or three successive days, the weather becomes very warm and oppressive, the thermometer rising to 94 or 95 in the shade; but generally it is sufficiently cool to wear the ordinary winter clothing of warm climates. A striking peculiarity of the months of June and July is the sudden and frequent squalls of rain and hail, which occur when the wind blows fresh from the W. or N.W. In the months of August and September, morning fogs occur, rising from the rivers and lakes, spreading over the adjacent lands, and disappearing as the sun gets high. They form an admirable protection to the low lands from the early autumnal frosts, which make their appearance during the last of August. Harvest commences the last week in July, when the crops of grass are generally in a fit state to cut. Oats and other grains ripen about the 1st of September, and have often to be reaped while still green. Nothing is more common than for whole fields of green grain to be cut down by the frosts. The potatoes, the main food of the poorer inhabitants, are dug during the early part of October, and very often after the ground is covered with snow.

The prevailing winds are from the W. and N.W. The mean quantity of rain falling during the ten months ending June 30th, 1845, was 2.61 inches. It is the southerly and easterly

winds that bring the heavy rains. The proportion of cloudy days considerably exceeds that of clear ones. The hygrometrical observations would seem to indicate that, in general, the atmosphere around Fort Kent is unusually free from aqueous vapors.

The settlers on the St. John's are mostly of French origin, many of them descendants of the old Acadians, who, driven by the English from Nova Scotia, settled at St. Anne's, now Fredericton, N. B., whence a number of families found their way to Madawaska. The first settlement was made in 1783. They have, from time to time, received a considerable addition to their numbers from the Canadas, particularly during the last few years. The population of the whole settlement in 1840 was 3,460—on the American side of the river, 1,584; on the British, 1,876. The first American settlers came into the country about thirty years since. They remained very few in numbers, until the impulse given by the lumber trade induced many, within the last five years, to clear lands on the upper St. John's. The French are a gay, careless, rather improvident people; like their ancestors, passionately fond of dancing and the music of the violin; devout Catholics, extremely bigoted and ignorant, and completely under the control of their priests. Their morals are generally good, and they are not often intemperate. They are generally of a small stature, and in this respect present a striking contrast to the tall, athletic lumbermen from Maine and New Brunswick. Most of them are of a nervous, excitable temperament, easily lose their presence of mind in moments of difficulty, and have obtained but little reputation for moral or physical courage. The poorer classes depend for their subsistence upon their fields of potatoes, which, with milk, bread of unbolted flour mixed with rye, barley, or buckwheat, often very black, very sour, and very badly baked, and a little pork, forms their principal living. Those that are richer fare better, though the living of the best of these would be considered poor enough by an American farmer. They raise barley, rye, oats, and potatoes; wheat is too uncertain a crop to be depended upon. The only garden vegetable universally cultivated is the onion, which forms a very marked ingredient in all their cooking. They live, for the most part, in huts built of logs; the chinks filled with moss and clay, heated within by a huge iron stove. A rickety table, two or three stools, a straw bed and coverlets, and a few cooking utensils, form the sum total of the furniture. The houses of the more respectable and wealthier inhabitants are formed of timbers neatly squared and closely fitted, divided internally into several apartments, often very comfortably furnished, and neatly arranged. The chimneys of all are formed of clay, moulded over a framework of wooden slats. The people are warmly clad during the winter in woolen fabrics of their own weaving; their feet protected from the cold by woolen socks and moccasins of moose-hide or untanned leather.

They marry at an early age, particularly the females. One couple, who dwell a short distance from the fort, was married when the husband was 13 and the wife 14 years of age; an instance occurred, since my residence in the country, of the marriage of a girl of 13 years, who had never menstruated; and this, I am told, is by no means uncommon.

Some of the families are rather remarkable in point of numbers. Twelve living within a mile of the garrison, and taken without exception, have had in all 93 children, and been married in the aggregate 162 years; a child every  $20\frac{1}{2}$  months. The wife of Jacques Camel (the father of one of these families) has been married 11 years, and had 7 children, all now living, except the eldest, who died at the age of 4 years. During the whole of these 11 years, she has never seen her monthly periods but once. Her second child was born exactly nine months after her first accouchement; her third the same period after the second. She has always been in the habit of nursing her children from one birth to another.

Burgoyne, æt. 59, residing at Green river, has had 20 children—18 by his first wife, 2 by his second. She is now enciente. His eldest daughter has been married ten years, and has had eight children. His mother had three pairs of twins.

Larent Terriand, at the same place, has had twenty-six children by one wife; the mother had her last infant at the age of 53.



Buonaventure Le Crog, in eighteen years, had nineteen children: of these, five pairs were twins.

Thibadeaux, now 66 years of age, has had 22 children by two wives—10 by the first, 12 by the second. Buonaventure Lisotte, at the age of 27, married Julia Martin at 19. He is now 51, she 43. They have had 17 children; and 4 pairs were twins.

Jerman Cire has had 22 children, all single births; his wife was married at the age of 14, and is now 43.

Jerman Michaux has had 20 children by two wives; the youngest of these is 4 years of age. He is now 59, she 45 years old.

The wife of Isaac Bialeto, aged 42, has had 19 children.

The wife of Pierre Richor, at Chatia Corner, has had in three years three successive twin births; all 6 children are now living.

Mr. Webber, the Massachusetts land agent, who took the census in 1830, saw in one log hut a woman with 5 children under  $3\frac{1}{2}$  years: one twin and one triplet birth. She was then pregnant a third time.

There are six families at Green river, living within the space of a mile, who have had, in all, 106 children; an average of 17.66 each.

They are attended during their confinements by the older women, some of whom have acquired considerable reputation in the management of obstetrical cases. They do not hesitate, when the labor does not progress with sufficient rapidity, to seize upon the presenting part, and effect the delivery by main force. In an arm presentation, the midwife fairly tore the child to pieces, effecting a delivery by means of a common kitchen pot-hook; and what is rather singular, the mother recovered without any serious trouble resulting. They leave their beds often within twenty-four hours after the birth of the child, to attend to their customary household employments. In consequence of this, their rapid child-bearing, and the hard labor to which they are occasionally subjected, the great majority of the females, particularly when advanced in life, suffer from prolapsus uteri and leucorrhœa. Uterine hemorrhages are also of very frequent occurrence.

In 38 cases, the average date of the first appearance of the menses was 13.5 years; in one case commencing at 11, in the most protracted at 19 years. To compare with these, I have procured the ages at which the only eight American girls who have been raised on the river, first menstruated. The average date was 15.12 years—the youngest at 14, the eldest at 16. As the Americans have a decided superiority in manner of living, use better and more stimulating food, wear warmer and more comfortable clothing—all of which causes would tend to accelerate the period of puberty—it would seem that race, as well as climate, has great influence in the matter. I have been able to obtain but few observations concerning the period of the menstrual flux. In three cases, it ceased at the ages of 43, 46, and 51 years.

During the fall, winter, and spring months, the forest becomes peopled by a floating population of lumbermen, whose number varies from 2,000 to 3,000. In the months of August and September they arrive at the fort, on their way to the lumber camps of the upper St. John's, and its various tributaries. They have generally spent the larger portion of their last year's wages in wild frolic and dissipation, and many of them are suffering from gonorrhœa, venereal, and the effects of a too great indulgence in spirituous liquors. On arriving at the seat of their operations, they build their camps—small huts of logs, with low sloping sides, and a large hole in the centre of the roof to allow the smoke to ascend into the open air. They, for the most part, live extremely well, particularly the American parties. They are amply supplied with wheat flour of an excellent quality, codfish, molasses, dried apples, good pork, and occasionally fresh beef. The men seem cheerful and happy, and certainly enjoy extraordinary health. All the day they are actively engaged in the open air, cutting and hewing the timber, or conveying it to the banks of the various streams, from whence it is to be floated to the market at St. John's. One firm, who employed in the woods, during the past winter, over 300

men, informed me that only three out of the number left their camps, and that none of these were seriously ill. The same state of good health prevailed in most of the other parties who were encamped above the fort, on the St. John's and its branches. Two cases of simple fracture—one of the fibula, the other of the clavicle—and a few incised wounds from careless blows with the axe, were the only accidents that came under my care during the past winter. In consequence of their uncleanly habits, and a gross stimulating diet, they frequently suffer from cutaneous diseases, particularly the different varieties of eczema and lichen. Severe attacks of lichen agrius were found perfectly manageable under a system of alteratives, gentle laxatives, a complete change of diet, and a due regard to cleanliness. The same causes, with the irritation of the smoke (often very troublesome in the camps), renders the tinea ciliaris, with slight inflammation of the meibomian follicles, a very common affection. Another disease of the eyes, to which not only lumbermen and teamsters, but all others who are much in the open air, are subject, is hemeralopia. It is most common in the months of March and April, when the length of the days has become considerable, and the men are exposed during this time to the bright light reflected from the snow, which covers the whole surface of the ground. It would doubtless be a complaint of much greater severity, and much more frequent occurrence, were it not that the proportion of cloudy days considerably exceeds that of clear ones. The cases, not very numerous, were easily cured by confinement to dark apartments, and avoidance of exposure to the exciting cause.

I have met with a considerable number of cases of dyspepsia among these lumbermen, the disease originating from the gross nature of their diet, aided no doubt by the large quantities of saleratus which the camp cooks mix with their flour, to lighten their bread. On breaking a loaf, it is frequently found full of portions of a yellowish or yellowish-green tinge, rather disagreeable to an uninitiated taste, but preferred by the men, who insist upon its use. A complete change of diet, with alterative and anodyne medicines, generally effected a cure in a very short time.

When the rivers open in the spring, about the middle or last of April, the lumbermen take advantage of the freshet to "drive" their timber to market. For two or three weeks, the men employed on this duty are engaged from sunrise to dark in setting free the logs of timber, often many tons in weight, which have caught and grounded on the bars or shores during the rise or fall of the water. During the whole of this time, they are using the most violent exertions, with their lower extremities constantly immersed in water of an extremely low temperature. They lie down at night, weary and exhausted, without changing their clothes, in front of a camp-fire, or on the floor of some convenient hut. From this exposure, rheumatic affections originate, not often of the acute form, but mostly subacute and chronic; and to these they often remain martyrs through a long life. It is a little singular, that during the two "driving" seasons I have been at the post, only two cases of bronchitis and one of tonsillitis have presented themselves for treatment, and attributed their maladies to this exposure. Not a single case of pneumonia or pleurisy. Some of these parties are allowed the free use of spirituous liquors, while others are conducted on the temperance plan.

Several cases of scurvy have placed themselves under my care; the disease makes its appearance in the spring months, in those who have been unusually restricted to a salt diet. This malady prevailed in former years to a very considerable extent, and used to be of frequent occurrence among the provincial camps on the Restigouche. Only one of the cases under my charge was of any severity. The man had been left at a camp on the Black river, in charge of some cattle, with no other provisions than salt pork and flour. Had he not been providentially discovered by some timber explorers, he would have perished in the wilderness. When brought by canoe to the fort, he presented some of the worst features of the disease—extreme debility; soft, spongy, ulcerated, and bleeding gums; subcutaneous effusions of blood, &c. He speedily recovered under the ordinary antiscorbutic treatment.

The region adjacent to Fort Kent is probably one of the healthiest within the limits of the



United States, and, though rigorous, the climate seems to be productive of the most robust health. Fevers and other diseases of a malarious origin are unknown, and other acute diseases are by no means of common occurrence.

In the fall and early winter months, and again in the spring, pulmonary affections principally pneumonia and pleurisy, present themselves for treatment. They are by the patients generally ascribed to colds, caught while exposed during a state of profuse perspiration. The cases under my care have been of a mild character, yielding readily to general antiphlogistic treatment. During seventeen months, out of 94 cases admitted into the hospital, there were two of bronchitis, and five of catarrh: all of these last were trivial cases, which remained under treatment an average of two days each. This freedom from catarrhal diseases is no doubt in a great measure owing to the peculiar dry bracing atmosphere of this region. While on the sea-coast, I found that catarrhal diseases originated not so much from sudden vicissitudes of temperature, as from a simultaneous change in the hygrometric condition of the atmosphere. A sudden change from a comparatively dry and warm westerly or northwesterly wind, to a cold damp air from the northeast or east, was certain to send its quota of sick to the hospital, with the various forms of catarrhal disease: while an equally sudden change from a warm southerly, to a cold northwesterly, was unattended by the same results. The variations of temperature, in the two instances, were equally great: but in the first, the surface of the body, at the same time that it was chilled by air of a low temperature, came in contact with an atmosphere already nearly saturated with moisture, and whose capacity for containing an increased quantity was consequently much diminished. Here two causes combine to produce a sudden check of the cutaneous secretions: some other portion of the system takes on itself an increase of duty, and catarrhal inflammation is the result. At Fort Kent, these two causes are seldom or never combined: for the only winds that are moist and bring rain in any quantity, come from the south and southeast, and both of them are attended by an increased warmth, tending to relax the surface: while, on the other hand, the cold winds from the north and northwest always bring an increased dryness of the atmosphere.

The climate of Fort Kent, like that of the colder regions of northern Europe, does not seem favorable for the production of pulmonary phthisis. During my sojourn at the post, I have neither seen nor heard of a case of this disease among the French or American settlers. Assistant Surgeon Isaacs, who, during the two years he was resident at the fort, had a much better opportunity than myself of becoming acquainted with the diseases of the country, informs me, not only that he never saw a case of consumption in the country, but that some of the inmates of the garrison, who were affected with suspicious symptoms, recovered from them entirely. The present revenue officer at the post, a man of decidedly scrofulous temperament, had suffered a slight attack of hæmoptysis, and other symptoms of incipient pulmonary disease, when he was ordered to this post. Though liable to catch cold when exposed, his cough no longer troubles him: he has gained flesh and strength, and considers himself free from the disease. A careful examination of the chest, in this case, gave no marked results: yet I have no doubt, from his symptoms, that when ordered to Fort Kent he was suffering under tubercular deposition in the lungs. One case of phthisis occurred in an artificer of company G, 1st artillery, a man hereditarily disposed to the disease, and having it fully developed before his arrival at the post. He remained for a year in tolerable health, until much exposed to hard labor in the midst of the melting snows of March and April, when the disease became more marked, and he was forced to enter the hospital. As his term of service had nearly expired, and he was desirous of visiting his friends, he was allowed a furlough, without remaining any length of time under treatment.

The children in and near the garrison have generally enjoyed the best of health, and have been afflicted with none of those complaints so common in warmer climates. It has frequently been made the subject of remark by the mothers, how vast the difference in this respect between Fort Kent and their former posts. For the last seven months, with the exception of a couple

of cases of eczema, and one or two slight pectoral affections, I do not remember to have been called to prescribe for a single sick child.

The goitre is not an uncommon complaint in the settlement, attacking here, as elsewhere, mostly females, and those after the age of puberty. The disease appears to be gradually disappearing. Some twenty-five years since, it was so common that very few of the females were unaffected, and even sheep and other cattle were to be seen with large swellings of the throat. It is supposed by the inhabitants to originate from the use of the river water; but this can hardly be the case, as the same water has been freely used by those living on the lower St. John's, and yet a case of bronchocoele has never been seen below the Grand Falls. It has attacked the American settlers as well as those of French origin. In one young American girl, æt. 15, it appeared after she had been in the country about a year; in two others, after they had lived on the river a longer time. In two of these cases, the disease was cured by a removal from the country.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT FAIRFIELD.

By Assistant Surgeon Richard H. Coolidge: 1843.

Fort Fairfield is situated on the south bank of the Aroostook river, in latitude  $46^{\circ} 46'$ , longitude  $67^{\circ} 49'$ , about six miles from its confluence with the St. John's, and about two miles east of the boundary-line as recently surveyed by the United States. It is 200 miles distant from the ocean, above which it is elevated 415 feet, and about 100 miles from the St. Lawrence. The eminence on which the fort is placed rises 100 feet above the river, which is here about 180 yards in width. The land in the vicinity is rolling, swelling into elevated ridges, and, with exception of the immediate banks of the river, covered with a dense forest abounding in trees valuable for ships and other purposes. The most common are the white and yellow pine, which form staple articles of export; the sugar and other varieties of maple; the beech, birch, ash, fir, spruce, and cypress. The coptis trifolia and asarum Canadensis are found in abundance. The soil abounds in limestone, and is uncommonly productive. Notwithstanding the hyperborean rigor of the climate, wheat sowed in the fall yields an abundant harvest, owing to the fact that the ground is covered with snow from November till May. The transition from winter to summer is very rapid; the trees put forth their leaves, and wild flowers bloom, while masses of snow remain in the forests. Field strawberries ripen about the 1st of July. The ice in the river generally breaks up about the middle of April. The thermometer here has a range of  $122^{\circ}$ , rising to  $98^{\circ}$  in summer, and falling to  $-24^{\circ}$  in winter. This is at the hours appointed for making meteorological observations; but the actual range is even greater, the maximum being  $100^{\circ}$ , and the minimum so low as to freeze the mercury in the bulb. The prevailing winds are from the N. and N.W.

Game is not very abundant. The principal varieties are the moose, cariboo, deer, and bear. Wolves are very numerous, and in winter are sometimes troublesome, occasionally appearing in the roads in the daytime, and following and sometimes attacking travellers. The lakes abound in trout, and the river in the finest salmon during the season, when they ascend the St. John's, and pass the falls of the Aroostook, to deposit their spawn upon the clear pebbly bottom of that stream. The Aroostook falls 102 feet within a distance of a mile and a half, by a succession of rapids and cascades, the largest of which has a perpendicular fall of about 12 feet. It is only the largest and most powerful of the salmon that succeed in passing this fall, and these frequently make several unsuccessful efforts before accomplishing that object. Mosquitoes appear early in summer, in immense numbers, and also a species of fly, called by the Indians "*no see 'ems*". These are so numerous and troublesome in the woods, as to render some protection for the hands and face absolutely necessary. The officers engaged in the boundary survey were compelled to resort to the use of camphor or creosote ointments, as a measure of protection.

Numerous opportunities have occurred for examining the aurora borealis, and my attention



has been directed to the occasional formation of clouds, emitting silent lightning, in the vicinity of the streamers: the remaining portion of the sky continuing as before, unclouded. This phenomenon was beautifully displayed on the evening of the 1st of July, 1843. At 9.45, p. m., the sky being perfectly clear, numerous brilliant streamers, having the form of inverted cones, appeared midway between the zenith and the northern horizon. A brisk wind then sprung up from the S.S.E. and a few black clouds passed to the N.N.W. At 10, p. m., a beautiful luminous arch was seen rapidly extending itself from the eastern horizon to the west, having an apparent breadth of four or five degrees; its central and highest portion, when fully formed, being in the zenith. A distinct luminous wave was seen moving from the eastern extremity of this arch to its western; the arch itself moving slowly south. In fifteen minutes after the complete formation of the arch, its eastern extremity was invisible, and it progressively disappeared, the western extremity being longest visible. During this time, a large black cloud formed in the west, emitting sheets of vivid lightning, which continued fifteen or twenty minutes after the disappearance of the arch. No clouds had passed over to the west; the wind blowing steadily from the S.S.E., and all the clouds passing to the N.N.W. It was observed that the cloud in the west spread toward the south as the arch moved in that direction. I have thought this observation worthy of note, as tending to identify the aurora borealis with electricity.

This post is uncommonly salubrious: the climate, though rigorous, is uniform for long periods, and does not appear favorable to the development of phthisis, or of other affections of the respiratory system. The country is very little settled, but, so far as my observation extends, no case of consumption has occurred, either in the permanent inhabitants or among the numerous parties of lumbermen, who pass the entire winter in the open air, and are the most hardy and athletic of men. The diet of these men consists principally of pork, bread, sugar, and tea, of which large quantities are drunk daily. Alcoholic stimulants are rarely, if ever, found in their camps, tea being the substitute. In the command, two cases of phthisis have occurred: one, complicated with extensive pleurisy, with effusion on the right side, proved rapidly fatal: the other, though well marked—a large cavity having formed in the superior lobe of the right lung, attended with such extreme emaciation that at one time death was daily expected—recovered: a result which I attribute to the invigorating effects of this climate, and to the use of iodine internally. More than a year has elapsed since the subject of this disease returned to duty, during which time he has been fully exposed to the vicissitudes of the weather. He is now healthy and robust.

The diseases are generally of a sthenic character, requiring free antiphlogistic treatment.

#### HANCOCK BARRACKS.

Hancock Barracks is located in the town of Houlton, Maine, latitude 46° 7', longitude 67° 49'. It is distant from the Bay of Fundy 180 miles, and from the ocean 156 miles, above which it is elevated 620 feet. The surrounding country presents an undulating aspect. The position is circumscribed by a range of hills, intersected at two points by the Meduxnekeag, a small, rapid stream, which runs through the town about half a mile from the fort. The barracks, situated upon a hill, are of wood, and are arranged in the form of a parallelogram, open to the south. The hospital, two stories high, also of wood, is dry and well ventilated. The drainage is perfect.

The season of summer is short, and, as frosts frequently occur before its close, the destruction of vegetation is not unusual. In the winter, snow falls to a great depth, and remains upon the ground during the whole season. The thermometer has a range of 125°; the maximum 99°, the minimum —26°. The average mean temperatures, deduced from seventeen years of observation, are: spring, 39.15; summer, 63.33; autumn, 43.15; winter, 16.41; year, 40.15. The mean annual precipitation in rain and snow is 36.97 inches.

Assistant Surgeon L. Sprague reports, in 1839, that "this station surpasses most others in

its freedom from sickness. Cold as the winter is, and damp as the autumn and spring are rendered by frequent rains, persons who have suffered from weak chest find their complaints much mitigated by a residence here. Consumption is rarely seen among the inhabitants of the town, and many persons, who were predisposed to that disease, have continued in good health, free from cough, and have had their constitutions invigorated and improved."

#### PLATTSBURG BARRACKS.

This station is on the west shore of Lake Champlain, about a mile from the town of Plattsburg, State of New York, in latitude  $44^{\circ} 41'$ , longitude  $73^{\circ} 25'$ , and about 310 miles north from the Atlantic ocean, above which it is 186 feet. The Saranac, a small river which rises in a range of lakes of the same name, forty miles southwest, discharges itself into Lake Champlain at this point. There are no extensive marshes in this vicinity. A range of mountains borders the lake on the west, and on the east the Green Mountains of Vermont are to be seen throughout its whole extent. The weather is very variable: sudden and great changes frequently occur. The thermometer has an extreme range of  $124^{\circ}$ , being  $100^{\circ}$  in summer, and  $-24^{\circ}$  in winter: the mean annual temperature, deduced from eleven years of observation, being  $44^{\circ}$ . The mean annual precipitation in rain and snow is 33.39 inches. The prevailing winds are from the S and S.W.; those from the south are often very cold, and accompanied with snow or rain.

#### WATERVLIET ARSENAL.

This post is situated on the west bank of the Hudson river, a few miles above Albany, and nearly opposite to Troy. The locality is surrounded by hills and an elevated back country. No medico-topographical report of this station can be found on the files of the Medical Bureau.

#### WEST POINT.

West Point is situated on the west bank of Hudson river, in latitude  $41^{\circ} 23'$ , longitude  $74^{\circ}$ , about midway in that part of the river called the Highlands; 50 miles from the ocean, and 170 from Lake Champlain. The public buildings are on a plain about a mile square, having in its rear a range of hills of from 600 to 1,400 feet in height. On each side of this plain there are ravines that serve to carry off the great floods of water, which descend from the adjacent hills after heavy rains or spring freshets. The soil is gravelly, with frequent ledges of rock, either just below the surface, or rising above it in the form of boulders. The nearest marshy ground is on the opposite side of the river, and about a mile distant.

The mean annual temperature of this post, as determined by observations continued for thirty-one years, is 50.73, with an extreme range of  $111^{\circ}$ ; rising in summer to  $100^{\circ}$ , and falling in winter to  $-11^{\circ}$ . The prevailing winds are from the N.W. and S. The annual quantity of rain is about 53 inches. There are no diseases which can be considered peculiar to this station; acute inflammatory diseases are rare. Indeed, the sick report is mostly made up of slight complaints and injuries. The spring and autumn are most productive of severe catarrhal affections and rheumatism; the summer, of disorders of the digestive organs; and the winter is decidedly the most healthy period of the year. From December to March, particularly in the coldest, and, of course, driest winters, it often occurs that, out of eight hundred persons, there is not, for weeks together, one seriously sick.

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#### DISEASES.

The diseases occurring among the troops stationed in the region now under consideration, will be statistically given in two abstracts—one for West Point, and one consolidated for the other stations. This course is necessary, because the unusually high ratio of disease at West



Point depends not upon the peculiarities of its position, but upon the fact that the command consists almost entirely of cadets, students in the Military Academy, who, when suffering from headache or other slight indisposition, can only obtain respite from academical studies or military exercises by having their names registered on the sick-report. A mere glance at the abstract will suffice to show this; the majority of the cases reported being under the head of "catarrhus," "cephalalgia," and "all other diseases;" which last were mainly slight indispositions, sore feet, toothache, and other minor disabilities.

The following table, compiled from abstract No. 3 for this division, exhibits the amount of sickness and mortality at West Point during the period under review:

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	6,855	7,325	6	1,068	0.9
Second quarter.....	6,565	7,627	8	1,161	1.2
Third quarter.....	7,035	8,918	15	1,267	2.1
Fourth quarter.....	7,149	7,770	2	1,086	0.2
Annual ratio.....	6,901	31,640	31	4,584	4.4
Exclusive of cholera.....		31,635	28	4,584	4.0

This table shows that the annual proportion of cases treated to the mean strength has averaged 4.58 to 1; that the ratio of deaths to the number of men was 1 in 222, or 0.4 of one per cent; and that the proportion of deaths to the number of cases treated was 1 in 1021, or less than 0.1 of one per cent.

During the ten years from 1829 to 1838, inclusive, the sickness at this post averaged 4.5 per cent., and the mortality 0.3 of one per cent.

## FEVERS.

Quarters.-----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength-----	6,855		6,565		7,035		7,149		6,901			
Diseases.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris continua communis.....	71	0	90	0	111	0	95	1	367	1	1 in 367	53
Febris intermittens quotidiana..	10	0	8	0	44	0	9	0	71	0	0 in 71	10
Febris intermittens tertiana....	25	0	157	0	252	0	70	0	504	0	0 in 504	73
Febris intermittens quartana....	0	0	0	0	1	0	7	0	8	0	0 in 8	1+
Febris remittens-----	1	0	8	1	15	0	4	0	28	1	1 in 28	4
Febris typhus-----	1	1	3	0	1	0	1	0	6	1	1 in 6	1—
Febris typhus icterodes-----	0	0	0	0	1	0	0	0	1	0	0 in 1	0
Total-----	108	1	266	1	423	0	186	1	985	3	1 in 328	142

The sick reports are without comment respecting febrile diseases proper; and the only remark in regard to eruptive fevers is by Surgeon Chas. McDougall, in his report for the third quarter, 1847, which is as follows: "The case of erysipelas was one of uncommon violence, in which the vital powers seemed to be so much oppressed by congestion, as to threaten a fatal termination. The specific powers of the sulphate of quinine, in large doses, were eminently displayed in the case, in not only changing the congestive condition, but in arresting the disease itself."

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters.....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength.....	6,855		6,565		7,035		7,149		6,901			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica.....	0	0	0	0	5	3	0	0	5	3	3 in 5	0
Diarrhœa.....	402	0	465	0	1524	1	527	0	2918	1	1 in 2918	422
Dysentery acuta.....	14	0	18	0	144	4	11	0	187	4	1 in 47	27
Dysentery chronica.....	2	0	0	0	0	0	0	0	2	0	0 in 2	0
Enteritis.....	1	0	0	0	0	0	0	0	1	0	0 in 1	0
Hepatitis acuta.....	1	0	0	0	0	0	0	0	1	0	0 in 1	0
Hepatitis chronica.....	0	0	0	0	1	0	1	0	2	0	0 in 2	0
Obstipatio.....	194	0	195	0	230	0	180	0	799	0	0 in 799	115
All other diseases of this system..	624	0	558	0	620	0	495	0	2297	0	0 in 2297	332
Total.....	1238	0	1236	0	2524	8	1214	0	6212	8	1 in 776	900
Exclusive of cholera.....									6207	5	1 in 1241	899

In reference to the cases of cholera Asiatica, Surgeon John M. Cuyler, in his report of sick for the third quarter, 1849, remarks, that "during the last six months diarrhœa and dysentery have prevailed to a very great extent amongst the pupils of the Academy and the enlisted men of the post; and, also, as far as I can learn, they have been of more frequent occurrence in the neighboring villages than is usual in this section of the country. Some peculiar atmospheric influence (whether or not it be that which causes epidemic cholera) was felt here previous to the accession of that disease, manifesting its presence by the modifications exhibited in almost every case of sickness that has happened within the past season. The case of dysentery which proved fatal on the 17th of July showed, in a very marked degree towards its close, some of the symptoms of cholera; but the first well-marked instance that appeared in this neighborhood was in the small town of Canterbury, twelve miles distant, where, in a few days, fifteen or twenty persons died. It was common along the line of the Hudson River Railroad, on the opposite side of the river, for some weeks previous."

The first death from cholera at West Point occurred on the 11th of August, and the last on the 7th of September, 1849.



## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters. ....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	6,855		6,565		7,035		7,149		6,901			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica	0	0	0	0	0	0	0	0	0	0	0	0
Catarrhus.....	1967	0	1543	0	880	0	1960	0	6350	0	0 in 6350	920
Phthisis pulmonalis.....	2	2	1	3	2	3	1	0	6	8	-----	0.8
Pleuritis.....	17	0	5	0	0	0	21	0	43	0	0 in 43	6
Pneumonia.....	4	1	4	0	1	0	1	0	10	1	1 in 10	1.4
All other diseases of this system.....	23	0	62	0	60	0	45	0	190	0	0 in 190	27
Total .....	2013	3	1615	3	943	3	2028	0	6599	9	1 in 733	956
Rheumatismus .....	201	0	201	1	156	0	161	0	719	1	1 in 719	104

The anomaly presented in the foregoing table, of more deaths from phthisis than there were cases reported, is to be explained by stating that patients are sometimes admitted to hospital with acute diseases, which terminate in, or lead to, the development of consumption; in such cases, the original disease only is reported in the list of admissions.

The epidemic influenza prevailed here in June, 1843, making its appearance about the first of that month, and terminating about the first of July. Surgeon Cuyler remarks that "the disease was of a less catarrhal character than usual, affecting the nervous system more generally."

The following table, from abstract No. 4 of this division, exhibits the amount of sickness and mortality in the region lying east of the Great Lakes:

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	3,731	1,541	13	413	3.4
Second quarter.....	3,706	1,624	17	438	4.5
Third quarter.....	3,473	1,852	3	533	0.8
Fourth quarter.....	3,304	1,409	6	426	1.8+
Annual ratio.....	3,553	6,426	39	1,808	10.9

The foregoing table shows that the average annual proportion of cases of disease to the strength of the command was 1.8 to 1; the ratio of deaths to the number of men, 1 in 91, or 1.09 per cent.; and the proportion of deaths to cases treated, 1 in 164.77, or 0.6 per cent.

## FEVERS.

Quarters. ....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	3,731		3,706		3,473		3,304		3,553			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris continua communis.....	27	0	43	0	41	0	40	0	151	0	0 in 151	42
Febris intermittens quotidiana.....	7	0	30	0	28	0	16	0	81	0	0 in 81	22
Febris intermittens tertiana.....	13	0	27	0	58	0	15	0	113	0	0 in 113	32
Febris intermittens quartana.....	0	0	6	0	3	0	7	0	16	0	0 in 16	4
Febris remittens .....	6	0	10	0	4	0	0	0	20	0	0 in 20	6
Febris typhus.....	0	0	0	2	0	0	3	1	3	3	3 in 3	1
Febris typhus icterodes.....	0	0	0	0	0	0	0	0	0	0	0 in 0	0
Total .....	53	0	116	2	134	0	81	1	384	3	1 in 128	108

Although it is evident, from the statistical table, that fevers of the intermittent type are comparatively rare in this command, it is, nevertheless, proper to remark, that a majority of the cases reported occurred in troops who had recently served in Florida. To such an extent is this the fact, that the few exceptional cases were considered by the medical officers worthy special remark.

The original reports afford no clue to the anomaly of two deaths from typhus fever in the second quarter; no cases of that disease having been reported. It is *probable* the cases were, in reality, typhoid terminations of other diseases.

ERUPTIVE FEVERS.—In this class we notice an epidemic of rubeola, which occurred at Hancock Barracks in April and May, 1841. No particulars have been reported. Seventeen cases occurred among the troops; but it is highly probable that the disease prevailed much more extensively in the families of officers and soldiers; the official statistical reports being confined to the military force proper.

In June, 1841, acting Assistant Surgeon Augustus Viele reports from Watervliet Arsenal, that “many cases of erysipelas, of a malignant and fatal character, have occurred in the vicinity of this post during the past quarter; also many cases of puerperal fever, nearly all of which proved fatal.” In March, 1842, Assistant Surgeon L. C. McPhail, at Plattsburg Barracks, reports the prevalence of an epidemic erysipelas of a very fatal character, in the northwest part of Vermont, along the New York border, and in the counties of the latter State bordering on Lake Champlain. The disease had then (March 31st) reached Plattsburg, without any mitigation of its severity. The same officer, in his report for the first quarter, 1843, remarks, that “the epidemic erysipelas noticed in my report for March, 1842, has continued in these parts to the present, and deaths from it are of almost daily occurrence. During its prevalence, otherwise trifling wounds and injuries have become serious, and in several instances fatal, from their becoming erysipelatous, followed by gangrene; and parturient women have fallen, in unusual numbers, victims to puerperal fever.” Again, in June, 1843, this officer reports as follows: “The erysipelas reigns no longer here epidemically; but occasionally a case is seen, and wounds still manifest a disposition to take on erysipelatous inflammation.”

Scarlatina prevailed in the vicinity of Plattsburg Barracks during the third quarter of 1842, and again in the second quarter of 1845.



## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	3,731		3,706		3,473		3,304		3,553			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica.....	0	0	0	0	0	0	0	0	0	0	0 in 0	0
Diarrhoea.....	62	2	119	0	295	0	121	0	597	2	1 in 298	168
Dysentery acuta.....	15	0	25	0	69	0	6	0	115	0	0 in 115	32
Dysentery chronica.....	1	0	2	0	0	0	2	0	5	0	0 in 5	1
Enteritis.....	0	0	14	0	8	0	0	0	22	0	0 in 22	6
Hepatitis acuta.....	0	0	1	0	4	0	2	0	7	0	0 in 7	2
Hepatitis chronica.....	0	0	2	0	2	0	4	1	8	1	1 in 8	2
Obstipatio.....	48	0	53	0	64	0	43	0	208	0	0 in 208	58
All other diseases of this system	112	0	114	0	180	0	102	0	508	0	0 in 508	143
Total .....	238	2	330	0	622	0	280	1	1470	3	1 in 490	413

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	3,731		3,706		3,473		3,304		3,553			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica.....	20	0	14	0	15	0	15	1	64	1	1 in 64	12
Catarrhus .....	404	0	321	1	256	1	294	0	1275	2	1 in 637	358
Phthisis pulmonalis.....	7	3	2	4	4	1	4	2	17	10	1 in 1.7	47
Pleuritis .....	42	1	25	0	22	0	32	0	121	1	1 in 121	34
Pneumonia .....	35	0	27	2	18	0	16	0	96	2	1 in 48	27
All other diseases of this system	1	0	6	0	5	0	1	0	13	0	0 in 13	4
Total .....	509	4	395	7	320	2	362	3	1586	16	1 in 99	446
Rheumatismus .....	51	0	92	1	69	0	58	0	270	1	1 in 270	76

Epidemic catarrh (influenza) prevailed in the vicinity of Watervliet Arsenal in June, 1843. At Plattsburg it appeared about the middle of March, partially ceased in May, and returned toward the close of June. At Hancock Barracks, catarrh was prevalent during the second quarter, 1843, and Surgeon A. N. McLaren reports that "some cases assumed all the characteristic symptoms of influenza." This epidemic commenced at that station in July, 1843, four or five days after its announcement in Boston. At Fort Fairfield, it commenced on the 15th of August; and at Fort Kent, in July.

The medical officers appear to have pursued one kind of treatment: emetics, followed by some mercurial cathartic, with Dover's powder, pediluvia, and counter-irritants to the chest.

## REGION OF THE GREAT LAKES.

Eleven stations have been occupied in this region during the period under review, viz: Madison Barracks, Fort Ontario, Fort Niagara, Buffalo Barracks, Detroit Barracks, Detroit Arsenal, Forts Gratiot, Mackinac, Brady, Wilkins, and Howard.

## MEDICAL TOPOGRAPHY AND DISEASES OF MADISON BARRACKS.

By Assistant Surgeon Thomas Henderson: 1839.

This station is at Sacket's Harbor, N. Y., in latitude  $43^{\circ} 50' N.$ ; longitude  $1^{\circ} E.$  from Washington. It is distant from the ocean three hundred and twenty miles; from Lake Ontario, eight miles. It is situated on the southern side of the bay formed by the entrance of Black river into the lake. The river is the third in size that is wholly in the State of New York. The color of the water is quite dark, a feature not uncommon in this region, and not readily accounted for. The water is not drank by those who live near it, being thought unwholesome.

A small creek empties into Black river about three-fourths of a mile northeast of the post.

There are no marshes near to the post, that could affect the health of the garrison.

The plain of the parade-ground is between twenty-five and thirty feet higher than the level of the lake. The surface of the lake is about two hundred and thirty feet higher than the ocean; consequently, the plain of the parade-ground is two hundred and sixty feet higher than the ocean.

The grounds around the garrison are so level that they cannot be perfectly drained. The soil is dark, with much clay, and rests on a stratum of limestone, which is from one to three feet below the surface. The nature of the soil, and this superficial calcareous stratum, keep the immediate vicinity of the post, even after ordinary rains, boggy, and favoring terraqueous exhalation.

The physical aspect of the surrounding country is waving and undulating. The soil is generally rich.

The forest-trees are maple, beech, birch, walnut, bass, ash, elm, and hemlock. Esculent vegetables are produced in great abundance and variety. The staple agricultural product is wheat.

No minerals are found in the immediate vicinity of Madison Barracks. About fifty miles northeast, lead mines of great value are wrought, and iron ore is obtained in the southeast part of the county (Jefferson) in which the station is located.

As there are no marshes in the neighborhood of the barracks that can sophisticate atmospheric currents, no results from *prevalent winds* can be stated. Ocean winds are not known here. The lake has its balmy breezes in summer, and its bleak blasts in winter: the latter prevailing with great vehemence, but not productive of disease.

In looking at "*the season of the year most productive of disease*," the annals of Sacket's Harbor, like those of the lake-shores on the frontier generally, show that formidable diseases have prevailed at all seasons of the year. During the war of 1812, the epidemic called pneumonia typhoides originated on the lines, and appeared at this place. Those who recollect that extraordinary disease, know that it existed in the winter and spring, ceasing in summer. In July, 1813, from a tenth to a fifth of the crews of Commodore Chauncey's squadron were on sick report at the Harbor. In August more than one-sixth of the seamen were left on shore; and Cooper's Naval History tells that at one time in this season (1813) the Madison had nearly one-half of her complement on the sick-list. The same author states that, in the winter of 1814, the sickness at the Harbor was of the gravest character; one-half of the crew of the Madison was sick, and one-fifth died. In the summer of that year the operations of the squadron were delayed by the illness of the mechanics at the navy-yard.



Since the peace of 1815, I learn from intelligent army officers and from respectable citizens that the Harbor has been a healthy place. No winter diseases, except ordinary epidemics, and the pulmonary disorders, and those of fibrous tissues incident to such climates, have existed. The summer diseases have been mild and tractable; autumnal remittents neither common nor fatal. The second regiment of infantry was at this post for two or three years, about 1826, and was free from disease. Troops have been subsequently stationed here, and enjoyed health. The country round about has had similarly uniform exemption from sickness.

In the fall of 1838, the eighth regiment of infantry was concentrated at Madison Barracks: some detachments had been at the post during the year, and, as I am informed, general health prevailed. In the month of October, 1838, not a case of remittent fever appears on the quarterly report of sick. During the winter of 1838-'9 some cases of fever occurred, and proved fatal—death from cephalic irritation. I was on duty at several stations on the frontier during that winter, viz: Rochester, Oswego, Ogdensburg, Morristown, and Buffalo, and saw no such cases as proved fatal at the Harbor.

Extensive and fatal sickness prevailed in Michigan, and west thereof, during the summer and autumn of 1838.

In May and June, 1839, diarrhœa became very rife at Madison Barracks, with here and there a case of fatal remittent fever. In July, and the subsequent months, up to this date, (October 25,) the diarrhœa has been almost universal. Cases of fever became more numerous in July and August; several were fatal. The morning report rose to eighty sick, exclusive of those in garrison, who are not *reported* sick. On the 23d of August I reported for duty, and found disease prevailing to great extent in forms of diarrhœa, remittent fever, and cases of both combined.

Let it be here observed that the summer of 1838 was intemperately hot and dry; the summer of 1839 was cool, and seasonable as to rain. General health prevailed east and south, except at Charleston, S. C., in 1838. In 1839, with a season throughout ostensibly favorable to health, so far as moderate heat and moisture are concerned, epidemic dysentery prevailed in New England; the most malignant endemics existed in New Orleans, Mobile, Pensacola, St. Augustine, Charleston, in Augusta, (Georgia,) in Illinois, and in the towns and cities on the lower Mississippi. Is it, then, remarkable that Madison Barracks should have been more sickly than usual? especially when it appears that, in several localities, not far from the post, similar and severe visitations of fever appeared. Sacket's Harbor village has had more fever than has been known for twenty years. In the neighboring farming country, places usually healthy have suffered from fatal malarial sickness. In a little village on the St. Lawrence, (Cape Vincent,) not far from the post, there were at one time twenty-three cases of fever. At Hammond and at Lisbon, places about a day's journey from Madison Barracks, and places heretofore healthy, sickness was very severe.

And yet, as if the caprice of malarial influence were ever to baffle search into causes successfully, at Rochester and Buffalo, I am told, the troops were healthy; at Plattsburg most remarkably so. Nearer to Madison Barracks, at Ogdensburg on one side, and at Oswego on the other, the towns were perfectly free from disease. I was informed by a very respectable physician at Oswego, that between May and the 22d of August, he had not seen one case of deliberate fever. At the same time the eighth regiment, in all its departments, officers, soldiers, and families, was affected with diarrhœa, and, as the autumn approached, remittent fever appeared very generally. In September there were *forty-four* cases of fever, exclusive of what appeared among the families. In October, up to the 22d, there were *thirty-eight* cases on the hospital register; making an aggregate of what I have seen since the 23d of August of about *ninety* cases, exclusive of *jaundice* and *intermittent* cases, that are forms of malarial disease; and especially exclusive of *diarrhœa*, the cases of which were extremely numerous and obstinate. This last disease would readily yield to hospital treatment and diet, but recurred too readily on going to quarters and to ration diet, or it would lapse into remittent fever.

Information respecting the "*supposed causes*" is called for. I submit a few observations on this head.

At a military station, where, in the autumn of 1838, men were collected under disadvantageous circumstances, general health prevailed, during and after a season of unexampled heat and drought; while at the same military station, in the summer and autumn of 1839, the succeeding year, and during an equable and pleasant season, hundreds of cases of diarrhœa, and one hundred cases of remittent fever, beside jaundice and intermittents, arose; when, too, the disadvantages of 1838 were removed—it is natural, I say, to look for an obvious cause for such a difference. So far as the immediate *locale* is concerned, everything is favorable to disease in 1838, except the drought, and on the contrary hand in 1839. In 1838 the barracks were repairing and being cleaned, the sleeping rooms wretchedly ventilated, the post comparatively unpoliced, and the men unused to the water; while in 1839 the works were done, the company rooms much improved, though still imperfect in ventilation, the police of the post admirable, and the men accustomed to the water. Within the pickets no obvious cause existed.

The neighboring level ground was more moist in 1839 than in the preceding year; but no more so than during most of the seasons for twenty-five preceding years, when no sickness prevailed in the garrison when occupied, or in the village of Sacket's Harbor. A cause cannot obviously be found in this.

It is known that, within a few years, the lakes have risen between three and five feet, and are now falling. Popular opinion, which should always be attended to on such questions, though very often incorrect, has ascribed the sickness to this fall of water. I see nothing in the laying bare annually of a few inches of lake shore, nor in the draining of tributary streams, that could cause the sickness at Madison Barracks; for in the vicinity no grounds have been covered or laid bare by the rise or fall of water so as to afford malaria. This rise and fall of the vast interior seas is a phenomenon, but cannot be philosophically considered as a cause of endemics.

Again, the opinion is that the water is bad, and has caused disease. It is true the water is bad to the taste, and it is wisdom and duty to provide a garrison with the purest water; and this can be done at Madison Barracks by having appropriate cisterns. Yet it should be borne in mind, that in 1838 *a fortiori* water should have made the troops sick; and also, that as many who were accustomed to the water of this calcareous region died, as of those who were not used to it; and that no disproportion of sick, so far as foreigners to the water are concerned, favors the idea of this aqueous cause of disease. Nor has sickness heretofore existed among troops here, to justify the idea that the water was the cause. The water is, as far as we know, always the same, while fever has rarely appeared since 1816; since which, all parts of this lake region have been, from cultivation of the soil, becoming more salubrious. Limestone water has been the drink, where the health of the troops and inhabitants has been perfect this season.

Under the head of "probable causes of sickness," it is proper to say that the barracks are not well ventilated; but they were worse in this respect in 1838 than in 1839.

Lastly, there is no reason to believe that there has been any defect in the quality of the articles issued as rations.

The question recurs with some interest, though not specially put in the circular, Is Madison Barracks a sickly station?

In order to throw all light on this subject, I have looked at it in the fairest light: the sickness during the war of 1813: the condition of the post and village since the war, as ascertained from the most respectable observers; and our conclusion is, that it is a *healthy station*. Here are the reasons:

Although in 1813 and 1814 there was much sickness at Sacket's Harbor, yet it was incident to the state of war; to the crowd of soldiers and sailors assembled hastily at the post; to the inadequacy of good food and shelter: and to the exposures and privations endured by the seamen and soldiers.



Since the war, the station has generally been healthy, and the village adjoining uniformly so.

If Madison Barracks has been more sickly during the present season, so has the surrounding country in various places heretofore perfectly healthy.

The inference that a station is unhealthy, cannot legitimately be drawn from the experience of a season. The cause of the sickness at Madison Barracks in 1839 is, like the cause of summer and autumnal diseases, inscrutable. Disease seems to move in a cycle of years, and at some period of that cycle almost all sites are sickly.

**THE BARRACKS.**—The barracks were erected in 1822, and are constructed of the limestone that abounds as a building material in the vicinity. The exposure to the west and northwest winds is exceedingly unpleasant. No situation could be more disadvantageously exposed in the winter of this climate than is the parade-ground of Madison Barracks. The site is dry and airy. The barracks are at present badly ventilated.

**THE HOSPITAL.**—The hospital has been in one end of the barracks, and will continue there until the new hospital is completed.

It is, I believe, constructed after a plan furnished from the office of the Surgeon General. That plan has been modified by order of the Secretary of War, on the suggestion of the medical officer on duty at Madison Barracks, so as to have wings, in one of which is a *bathing-room*, in the other a *dead-room*; and under both wings are copious *cisterns* for rain-water. The lime-water used is unfit for various pharmaceutical purposes.

The hospital is being constructed of limestone, and in its plan due reference has been had to ventilation, and to all that may be essential to its adaptation for a hospital.

The site is bleak, and exposed to the violence of all winds that blow; it is decidedly objectionable on that score. It is too near the edge of Black-river bay; for hospitals should not be placed near fresh-water streams. It is comparatively inaccessible during the long and severe winter weather; for a ravine intervenes between it and the barracks, that will much incommode the sick in their access to the hospital.

Should these objections be valid, it is due to the medical officers at the post to state that another site was recommended by the surgeon on duty, when the hospital was about to be located. I have been so informed by the surgeon alluded to.

The following remarks of Surgeon H. L. Heiskell, respecting the unusual amount of sickness referred to by Dr. Henderson, in the foregoing report, are transcribed from his report of sick at Madison Barracks, for the quarter ending December 31st, 1839:

“The unusual amount of sickness which has prevailed during the greater part of the past year at this post, situated as it is in a healthy region of country, has been to many a source of no small surprise. Although the fever has never, to my knowledge, been of so general a character as to merit the dignity of an *epidemic*, it has been sufficiently serious to arrest attention, and to claim a careful investigation on the part of the medical officers. The result of my own reflections is, that the decomposition of the exhalations from the skin and lungs, usually termed *idio-miasmata*, resulting from the crowded state of the men's sleeping apartments, and their imperfect ventilation, was the most prominent cause of this fever. When I speak of ‘imperfect ventilation,’ I wish it to be distinctly understood that I do not impute blame upon any of the officers of the regiment. What I mean is, that, owing to the defective construction (including want of space) of these apartments, a proper ventilation cannot be obtained. What are the facts? Each company has an attic room for a sleeping apartment. Whether a full company or not, the size of the room is the same. There is a single entrance from below, by a flight of steps, for the men to pass in and out. The windows are all on one side, about four feet above the level of the floor. Ventilators, or openings, have been made in the roof, on the opposite side, at my suggestion. It will hardly be supposed, however, that in a cold climate they will be left open at night to allow the fresh air to enter. Such is the *economy* of the *construction*. That in regard to *space* is even more striking, and would seem to have been designed

as an experiment to try how many human beings could be crowded into the smallest possible compass without inducing suffocation. By a careful measurement of one of these company's sleeping rooms, it is ascertained that it contains about 8,500 cubic feet, independent of all necessary fixtures. Allowing for the space occupied by the bunks, lockers, gun-racks, &c., &c., there would be scarcely 8,000 cubic feet clear. Divide this amount by the average number of men in each company, say 60, and there would be  $133\frac{1}{3}$  cubic feet for each man. Those who were so unfortunate as to belong to a company of 90 strong, (and one of the companies did amount to that number,) would get one-third less. From these data it will readily be imagined what would be the condition of the air, which, instead of affording the vivifying principle to the blood, and preparing it for the vital and important functions of the animal economy, would act only as an irritant and poison. Some there are, whose opinions are entitled to much respect, who attribute the prevalence of the fever to the subsidence of the lake; and to some extent this may be true; yet, as the lake-shore in this vicinity is generally bold and rocky, I am not disposed to attach equal importance to that circumstance." Surgeon Heiskell gives the following as the general character of the prevailing disease: "The fever was marked by an exacerbation in the afternoon, with a remission more or less distinct toward morning; pulse small and frequent; skin exceedingly dry and rough; tongue coated with a brown or black fur, exhibiting a cracked appearance. When the fever was of a gastric form, the tongue was red, dry, and glossy; stools reddish and watery; tenderness of the bowels on pressure; in the advanced stage, the teeth and lips covered with dark sordes. A striking peculiarity of the disease consisted in a proneness to degenerate in, or become complicated with, diarrhœa; with catarrhal symptoms not unfrequently superadded. This condition of the bowels demanded great caution in the administration even of the mildest cathartics, and was as troublesome a symptom as I have had occasion to combat."

#### FORT ONTARIO.

This post is situated within the limits of the city of Oswego, on the southern shore of Lake Ontario, and on the east bank of the Oswego river, in latitude  $43^{\circ} 20'$ , longitude  $76^{\circ} 40'$ . It is on ground elevated fifty or sixty feet above the level of the lake, and about 290 feet above the level of the sea; is well drained, and has no swamps or stagnant water near it. Fevers of an intermittent type prevailed here in the summer of 1842, but since that time the garrison has been almost entirely exempt from that class of diseases.

#### FORT NIAGARA.

Situated on a point of land projecting westerly at the entrance of Niagara river into Lake Ontario, Fort Niagara is bounded on the north and northwest by the lake, and on the west and southwest by Niagara river. It is 14 miles from the Falls of Niagara, and 32 miles from Lake Erie. The surface of the country in the immediate vicinity is remarkably level, but there are no marshes within six or eight miles. The vegetable productions of the climate flourish here luxuriantly. The river at this point is about half a mile wide. The general character of the climate pertains to the same class as the preceding stations, marked by those meteorological features peculiar to positions on large bodies of water.

#### BUFFALO BARRACKS,

In the northern and most elevated portion of the city of Buffalo. The low grounds are distant, and are covered with a dense growth of timber. Between the barracks and the canal basin, and also between them and Buffalo creek, each about one mile and a quarter distant, intervenes the densest part of the city.



## DETROIT BARRACKS,

At the city of Detroit, Michigan. The surrounding country is flat. The soil is a stiff clay, combined with carbonate of lime; hence, in the rainy season, the land is in a great degree saturated with water, and to a certain extent submerged. The smaller streams emptying into the Detroit are sluggish, bordered with extensive marshes, and in the autumn abounding with decayed vegetable matter. As may be supposed from this brief outline of its topography, intermittent and remittent fevers, diarrhoea, and dysentery prevail among the troops, and also in the vicinity of the barracks. A still more fruitful cause of disease at this station is to be found in the temptations to vicious and intemperate habits afforded by a city. On this point, Surgeon Charles S. Tripler, in January, 1842, makes the following remarks:

“To realize the frightful intemperance of some of the men stationed here, one must see it. If permitted to go on unrestrained, this command must soon be decimated. Situated as the troops are, no degree of vigilance or severity on the part of the officers can even check, much less put a stop to it. We have no regular barracks; the buildings occupied as such, are accessible to whiskey smugglers at all points. No troops have constitutions capable of standing such persevering intemperance; they must be quartered differently, or they must die.”

DETROIT ARSENAL is at Dearbornville, on the river Rouge, about ten miles west of the city of Detroit. The country is low and flat.

## FORT GRATIOT.

Fort Gratiot, situated on the river St. Clair, half a mile from the outlet of Lake Huron, is elevated 598 feet above the level of the ocean, being twenty feet above the surface of the lake.

Black river, distant about one mile in a southwest direction, is the only stream, with the exception of the St. Clair, in the vicinity. “It is bordered,” says Assistant Surgeon Motte, “particularly on the west, by frequent broad marshes, which have been subjected to an accumulation of alluvion for a sufficient period to allow a deposition of *peat* from vegetable decomposition. These marshes exhale, during the summer and autumnal months, a pestilential atmosphere, generative of fever and ague, which is but too prevalent among the inhabitants in the vicinity.”

The surrounding country is greatly undulating. The soil is mostly a sandy loam, and the proportion of marsh is small. Clay is reached at the depth of twelve or fifteen feet. Most of the surrounding country is covered with forest; among the vegetable productions are oak, elm, maple, ash, hickory, black walnut, pine, &c.

“The lake and river shore in the immediate vicinity of the fort,” says Assistant Surgeon Motte, “is a low gravelly ridge, extending nearly a quarter of a mile from the margin of the lake, when the ground suddenly rises to the height of twenty-five feet above the surface of the lake, and retains this elevation, with little variation, to near the shores of Black river. This elevated ground gradually approximates the St. Clair towards the fort; and a few rods below, it becomes a perpendicular bluff in immediate contact with the water.”

Between the fort and the ridge just described, there is a stagnant pond, which it has been found impracticable to drain, and which, it is supposed, is the copious source of miasmata. The hospital and barracks are represented as defective, being very damp and ill adapted for ventilation.

## FORT MACKINAC,

Located on the island of Mackinac, in the straits connecting Lakes Huron and Michigan. The fort is on an abrupt elevation, 150 feet above the lake, and 728 feet above the level of the ocean. The island is about nine miles in circumference, and rises on its eastern and southern shore in abrupt rocky cliffs, the highest point being about two hundred and fifty feet above the lake. This post is one of the most healthy in the United States.

## FORT BRADY.

Fort Brady, situated at the Sault Ste. Marie, Michigan, is on the southern bank of that river. It is distant from Lake Superior 15 miles, from Lake Huron 50, and from the Atlantic ocean about 800 miles. The river at this point is six feet below the surface of Lake Superior, and nearly 600 feet above the level of the ocean. The physical aspect of the surrounding country exhibits considerable variety. The bank of the Ste. Marie, which is here three-fourths of a mile in width, presents a gradual slope for the distance of 250 feet, gaining in that space an elevation of 14 feet, in the rear of which the surface of the country approximates a level. For 300 yards from the bank of the river, the soil is cleared of timber, and is, although not very productive, in a state of cultivation. Immediately adjoining this cultivated ground is a marsh half a mile wide, beyond which high lands appear. This marsh extends five or six miles down the river in a southeast direction, and west and southwest for 15 or 20 miles. It is covered with some large forest-trees and a thick growth of underwood. On the opposite side of the river, the country is undulating and mountainous, and covered with a dense forest. The falls in the river at this point form an obstruction to the ship navigation of the upper lakes.

The prevailing winds are the west, northwest, and southeast. The northwest winds descend from mountain chains, traversing Lake Superior; and the west and southeast winds pass over the marshes already described.

## MEDICAL TOPOGRAPHY AND DISEASES OF FORT WILKINS.

By Assistant Surgeon Charles E. Isaacs: 1815.

The wild region bordering upon Lake Superior has been as yet but imperfectly explored by a few individuals, while to most persons it still remains entirely unknown. In former times, the numerous and warlike bands of savages threw greater dangers in the way of its exploration; and even at the present day, though this difficulty has long since ceased to exist, the natural obstacles and the hardships to be endured are such as to discourage all but the most hardy and enterprising. The sudden and violent squalls and storms that sweep the surface of the lake are hazardous even to the experienced *voyageur*; while its bold, rocky, and often inaccessible shores seldom afford a place of refuge from their fury. The examination of the interior is attended with excessive fatigue and exposure to the inclemency of the weather; and in the summer months the insects (the black flies and mosquitoes) are extremely troublesome. The rivers are small, short, and obstructed frequently by difficult and dangerous rapids; the dense evergreen growth sometimes forms almost impenetrable thickets; fallen timber is found crossed and interlaced in every direction; very much of the country is broken, rocky, and mountainous, with cliffs, precipices, and ravines of great height and depth, almost or quite impassable; and provisions must be packed and carried to great distances, as game is very scarce and not to be depended on.

Lake Superior may with propriety be compared to a vast, deep, and rocky basin, the edge in many places bordered by enormous precipitous trap, conglomerate, and other volcanic rocks, abounding in agates, carnelians, &c., and intersected by veins of metallic copper and its ores running north and south, inclining west about fifteen degrees. There is probably no region in the world in which copper has been found so generally diffused. It is seen on nearly the whole extent of the shores of the lake, on the north and south, on almost all the islands, while it extends to an unknown distance to the south, west, and north. At Copper Harbor two veins of black oxide of copper have been discovered in conglomerate rocks, to the extent of three hundred yards, varying in width from ten inches to two feet, and yielding, from the best specimens, upwards of 70 per cent. of pure copper. One of these veins is in active operation. A very rich vein of silver mixed with copper is worked at Eagle river, where shafts have been sunk to the depth of 70 feet, and the ore is equally good with that at the surface. The carbon-



ate, yielding from 20 to 30 per cent., has been found at Copper Harbor; and discoveries to great extent may now be anticipated, as adventurers are flocking in vast numbers to the country. On landing the troops appointed to occupy the military station, in May, 1844, there were not more than a dozen persons living within as many miles, and those were explorers. A recent account gives one thousand visitors during the present season. The immense wealth of the mines will undoubtedly induce multitudes to locate in this region.

As above stated, the region of Lake Superior is almost entirely uninhabited. The American Fur Company has four trading-posts, at the Sault Ste. Marie, at the Anse Bay, at Fond du Lac, and at La Pointe; with these exceptions, there are only a few scattered individuals, and some few families, along the whole extent of the southern coast.

Fort Wilkins is situated in latitude about  $47^{\circ} 30'$  north, and in longitude  $11^{\circ} 30'$  west from Washington. It is ten miles from Keweenaw Point, which is the extremity of a neck of land projecting sixty miles into near the centre of Lake Superior, and varying in width from two to forty miles. This peninsula is very broken, irregular, rocky, and mountainous. The rocks are trap and conglomerate. The country is covered with a dense evergreen growth of fir, pine, and spruce, with white birch and a few oaks and maple. The soil is *poor, barren, stony*: in the vicinity of the fort remarkably so.

Copper Harbor is two and a half miles long, affording a good anchorage. Opposite the entrance of the harbor, and near the landing, is a small lake; between this lake and the harbor, on a narrow neck of land, is the fort, twenty feet above the level of Copper Harbor. It is built upon conglomerate rock, which has been blasted away, in order to locate the buildings. The quarters and hospital are ample for two companies, and enclosed with picket-work. The water of Lake Superior is excellent, and is generally used: that of the small lake on which the fort fronts is dark colored, unpleasant to the taste, and appears to hold much vegetable matter in solution; it has been sounded to the depth of 60 or 70 feet, and has an outlet that runs by the side of the fort into the harbor. Last summer (1844) the weather was uncommonly fine, clear, moderately warm, and so continued till the end of September. The winter was mild; the thermometer, never below zero, was only three times at that point; the mean temperature for the winter was  $20^{\circ}$  above zero. The snow was from three to four feet on a level. I am informed by those who have resided in the country that the winters are generally mild; that the last was not unusually so. This is well contrasted with the cold at Sault Ste. Marie, 200 miles below, in lower latitude, where the winters are always severe, and where the mercury frequently falls 20 or 30 degrees below zero, and has been known to freeze. The insular position of Fort Wilkins probably explains the difference of the temperature. Since my last quarterly report (December, 1844) several cases of peritonitis, of very severe and obstinate character, have occurred here. The weather, at the time the disease commenced, was milder than it had previously been, and continued so for a short time. During the winter there was a sufficient supply of all the necessaries of life. Potatoes, pickles, and sauer-kraut were issued to the men. There was not the slightest appearance of scorbutus.

The first cases of this disease occurred on the 28th and 29th of December, 1844. They were soon followed by others. Although only thirteen cases were officially reported among the soldiers, many of the command were affected with premonitory symptoms—such as nausea, weight and oppression at the epigastrium; sometimes griping, burning pain, diarrhoea, and occasionally bloody discharges. Again, there were pricking, tearing, lancinating pains in the abdomen, with tenderness on pressure. Yet many of these cases were so checked, by promptly resorting to remedies, that, not running out their course, they were not reported; nor were some severe cases in the families of officers reported on sick-list. One case, that of a soldier, terminated fatally. The disease was marked by great severity of symptoms, by their proneness to recur, and by unusual obstinacy and resistance to the action of remedies. The plan most effectual to arrest premonitory symptoms was, abstinence from all food, counter-irritation, sin-

apisms, and hot applications to the abdomen—small doses of mass. ex hydrarg. c. opio, followed by cups, pediluvia, and enemata. If the disease did not *rapidly* yield, copious bleeding, followed by cupping, calomel and opium in doses to act gently on the liver and intestinal canal, and to relieve pain, were the appropriate means. I found it necessary in most cases to repeat bleeding and cupping three or four times. In the latter stages, blisters were used. In the first two cases only did I think it necessary to touch the mouth with mercury, and it is questionable whether it was of any service. The disease in its last stages had a strong tendency to pass into dysentery.

From the symptoms and aspects of all the cases carefully considered, and from the post-mortem developments in the one fatal case, the disease seems to have been an *obstinate* and *intense* PERITONITIS; the inflammation in the latter stages involving the mucous coat of the stomach to some extent, of the small intestines, but particularly that of the colon.

The *cause* of this disease is entirely unknown. It was at first attributed to the provisions. As, however, they were of good quality, no changes in them being discoverable, and as the troops have continued to subsist on the same supply ever since, without consequent disease, the cause cannot, with any probability, be referred to the diet of the troops. By some, the water of the small lake was supposed to be the cause; but several persons drank from it during the whole of the past summer, fall, and winter, without any bad effect. By many, it is used at the present time without detriment to health. During the prevalence of the disease, the weather was somewhat milder than it had previously been, and hence atmospheric vicissitude may have had influence in causation. Endemic atmospheric agency is probable, as a similar form of disease, attended with the same symptoms, prevailed at La Pointe, 180 miles west of Copper Harbor, four years ago, destroying about thirty of the inhabitants. This was also in the winter. I regret that it has not been in my power to obtain more precise information as to that endemic.\*

#### FORT HOWARD.

This post is situated on the northwest bank of Fox river, one mile from the point at which it empties into Green Bay. This bay, which is an arm of Lake Michigan, indents the land for 90 miles. It commences 40 miles wide, and gradually lessens to four miles at its head, where it receives the waters of Fox river. "It is skirted about its head," says acting Assistant Surgeon Ward, "with marshes a mile in width, covered with a luxuriant growth of grass and wild rice, which embrace the mouth of the river, and continue within half a mile of the fort. The water is from six inches to six feet deep on these marshes, which, by the operation of a diurnal flux and reflux of the waters of the bay, are alternately flooded and drained twice every 24 hours. Twenty rods back of the fort another marsh begins, and, spreading to the right and left, extends a mile or more in each direction. It differs from the marshes just described in this, that it is partly covered with timber, thickets of alder, evergreens, and grass." Proceeding north and west two miles, the country presents a densely wooded region, as far as explorations have been made. On the opposite side of the river, as far as Lakes Michigan and Winnebago, the country is also in its primitive state, covered with dense vegetation of forest and underwood. The soil mostly consists of a vegetable mould, intermixed with clay and sand, and is generally of a character to reward the labors of the husbandman.

The mean annual quantity of rain, on an average of eight years, is 31.40 inches.

This post is less under the modifying agency of the great inland seas than any other of this class.

\* Assistant Surgeon Isaacs reports two cases in detail, which are to be found in the New York Journal of Medicine and the Collateral Sciences, vol. vi, p. 195: March, 1846.



## DISEASES.

The following table, compiled from abstract No. 5 for this division, gives a condensed view of the aggregate amount of sickness and mortality among the troops during the period embraced in this report, and also the corresponding annual ratios:

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	10,999	5,107	44	464	4
Second quarter.....	10,949	6,426	34	586	3.1
Third quarter.....	9,681	6,125	31	632	3.2
Fourth quarter.....	9,755	5,139	37	526	3.7
Annual ratio.....	10,346	22,797	146	2,203	14
Exclusive of cholera.....		22,784	140	2,202	13.5

It will be perceived that the proportion of cases of sickness to the number of men is 2.2 to 1; that the ratio of deaths to the strength of the command is 1 in 71, or 1.4 per cent.; and that the proportion of deaths to cases treated is 1 in 156, or 0.64 of one per cent. Exclusive of cholera, the ratio of deaths to the number of officers and men was 1 in 73.9, or 1.3 per cent. per annum; and the proportion of deaths to cases treated was 1 in 162.74, or 0.61 per cent.

## FEVERS.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	10,999		10,949		9,681		9,755		10,346			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris continua communis.---	45	1	86	1	48	1	57	0	236	3	1 in 78	22
Febris intermittens quotidiana	70	0	390	3	469	0	169	0	1098	3	1 in 366	106
Febris intermittens tertiana.---	188	0	541	0	404	0	347	0	1480	0	0 in 1480	143
Febris intermittens quartana.---	15	0	26	0	28	0	16	0	85	0	0 in 85	8
Febris remittens.-----	36	2	75	0	292	8	123	4	526	14	1 in 37	50.8
Febris typhus.-----	8	0	5	1	13	0	7	1	33	2	1 in 16	3.1
Febris typhus icterodes.-----	0	0	0	0	0	0	0	0	0	0	0 in 0	0
Total -----	362	3	1123	5	1254	9	719	5	3458	22	1 in 157	334

ERUPTIVE FEVERS.—It appears from the quarterly reports that rubeola prevailed at Buffalo Barracks in June, 1840, and 1845; and at Detroit Barracks in the first quarter, 1843, and second quarter, 1850. Scarlatina at Madison Barracks, and in the vicinity of Detroit, in Feb-

ruary and March, 1844; and again in the first quarters of 1845 and 1846. Five cases of varioloid occurred at Detroit Barracks in January, 1849. In the winter of 1851-'52 variola prevailed extensively among the Indians in the vicinity of Fort Brady.

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	10,999		10,949		9,681		9,755		10,346			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica.....	0	0	1	1	12	5	0	0	13	6	1 in 2	
Diarrhoea.....	304	4	594	3	1017	0	571	6	2486	13	1 in 191	240
Dysentery acute.....	30	0	45	1	116	2	84	0	275	3	1 in 92	26
Dysentery chronic.....	7	0	4	1	5	0	8	0	24	1	1 in 24	2.3
Enteritis.....	15	1	7	0	5	0	3	1	30	2	1 in 15	2.9
Hepatitis acute.....	1	0	3	0	7	0	0	0	11	0	0 in 11	1
Hepatitis chronic.....	5	0	5	0	1	0	3	0	14	0	0 in 14	1.3
Obstipatio.....	90	0	137	0	150	0	106	0	483	0	0 in 483	46.6
All other diseases of this system.....	257	1	314	1	309	1	294	4	1174	7	1 in 167	113
Total.....	709	6	1110	7	1622	8	1069	11	4510	32	1 in 141	436
Exclusive of cholera.....									4497	26	1 in 173	434

The reports of sick contain no noteworthy remarks respecting diseases of this system, until we come to those for the quarter ending September, 1849. Surgeon Tripler, in his report from Detroit Barracks for that quarter, makes the following statement concerning Asiatic cholera:

“About the first of July a few cases of cholera asphyxia made their appearance in Detroit. The municipal authorities had in season made extraordinary efforts to maintain a strict system of police, and to distribute daily a free supply of lime throughout the city. The sale of vegetables was prohibited, and with most praiseworthy firmness these ordinances were enforced. I caused to be procured a sufficient quantity of sulphuric acid, oxide of manganese, and salt, to fumigate from day to day, as long as necessary, every inhabited apartment in the barracks; and recommended the usual precaution with regard to the diet, clothing, and hygienic regimen of the men. The result of all these measures was, under Providence, that but one soldier died from the disease, and he an inveterate drunkard; and but about one hundred in the city of Detroit, including those landed from the steamboats. The disease has entirely disappeared.”

Assistant Surgeon R. F. Simpson reports the prevalence of cholera among the Indians who were encamped in the vicinity of Fort Howard, in the latter part of October, and beginning of November, 1849. About the same time many of the soldiers were sick with diarrhœa, but the cholera was not communicated to the troops or to the citizens residing near the fort. The Indians had just received their annuities, and it is probable the mortality among them was mainly due to their dissipation.



## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength .....	10,999		10,949		9,681		9,755		10,346				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Bronchitis acuta et chronica..	39	1	48	0	24	0	35	0	146	1	1 in	146	14
Catarrhus.....	1013	0	1061	1	679	0	824	0	3577	1	1 in	3577	345
Phthisis pulmonalis.....	14	12	9	8	13	6	11	7	47	33	2 in	3	4.5
Pleuritis .....	83	1	83	0	42	0	55	1	263	2	1 in	131	25
Pneumonia .....	89	4	35	4	21	0	40	1	185	9	1 in	20	18
All other diseases of this system .....	16	1	21	1	10	1	16	1	63	4	1 in	16	6
Total .....	1254	19	1257	14	789	7	981	10	4281	50	1 in	85	413
Rheumatismus .....	293	0	329	1	255	0	266	0	1143	1	1 in	1143	114

Influenza prevailed, as an epidemic, at most of the stations in this region in the summer of 1843. The symptoms and treatment were generally so similar to those already detailed in this report, that a repetition is not considered necessary. At Madison Barracks it prevailed in June and July; at Fort Ontario, in June only; at Forts Niagara, Mackinac, and Brady, in July; and at Detroit and Buffalo Barracks, in June. Surgeon R. C. Wood reports that "epidemic catarrh made its appearance at Buffalo Barracks on the 20th June, characterized by great restlessness, languor, slight chills, fever, and cough. In some cases, pulmonary congestion ensued; in other cases, diarrhœa ushered in the disease. The command has been completely prostrated by it: several of the men were relieved from post, being attacked with sudden faintness. In ordinary cases, emetics, saline cathartics, antimonial preparations, and the free use of warm chamomile tea, have subdued the disease in a few days. In others, venesection and cupping have been indicated."

## NORTH INTERIOR REGION—WEST OF THE GREAT LAKES.

This region includes all that portion of the United States which lies between the Great Lakes and the Rocky Mountains, and north of the fortieth degree of latitude. During the period under review, ten stations have been occupied in this region, viz: Forts Winnebago, Crawford, Snelling, Atkinson, Dodge, Des Moines, Ripley, Ridgely, Kearney, and Laramie.

## MEDICAL TOPOGRAPHY AND DISEASES OF FORT WINNEBAGO.

By Surgeon Lyman Foot: 1839.

Fort Winnebago is situated on the right bank of Fox river, directly opposite the portage between that river and the Wisconsin, and is elevated about 70 feet above the level of the latter; it is in latitude 43° 31', longitude 89° 28'; 81 miles west of Lake Michigan, and 112 miles southwest of Green Bay.

The marshes bordering the Wisconsin and Fox rivers are very extensive, and come up quite to the left bank of the Fox river opposite the fort. They are but little above the level of the two rivers, and are sometimes overflowed. Boats have frequently passed from one river to the other. They are covered with a luxuriant growth of grass, and could be much improved by ditching. The grass makes excellent forage. The formation of these marshes is a subject of much speculation. In cutting through the thick vegetable matter on the surface, of from two to four feet, you come to a stratum of soft mud, generally a foot or two in thickness, but in some places from eight to ten feet deep. These last are generally known by the name of "shaking marshes," and are dangerous to cross with horses. They appear, however, to be gradually filling up, from the same cause that has made the rest more solid. Beneath the mud comes a stratum of fine silicious sand. How were these marshes formed? I suppose, from their situation, they were originally shallow lakes, or lagoons, full of aquatic plants. These plants were, as they are now, covered with millions of animalculæ, whose covering, or shell, is pure silex. They die annually, and deposit their silex to fill up the lake. Thus, in process of time, they have become filled with sand, and the decaying vegetable matter has formed the thick sward on the surface. This is not all speculation; the process is actually going on in some small lakes or ponds still existing in and near these marshes. The old Indians inform us that marshes that were impassable for man fifty years since, can now be crossed with horses. Numerous springs of clear cold water are found in the midst of the marshes, where one may see constantly thrown up by the gushing water the purest white silicious sand.

The soil of the upland about this post is a light loam, mixed with silex, lime, and clay. It is what is called a "*warm soil*," and vegetation comes forward earlier than at any place in the same latitude I have ever been stationed at. The mineral productions are very few; secondary limestone, and sandstone of recent formation, are the only rock *in situ* I have seen. Indications of iron exist in various places, and clay-beds of the finest quality are found on the banks of the Wisconsin, one mile and a half from the fort. The bricks made of this clay are of superior quality, and resemble the Edinburgh brick.

Several varieties of the oak, the hickory, and the maple are to be found here; also the willow, basswood, and elm. Corn, oats, and all the culinary vegetables common in western and middle New York, grow well here. The most peculiar native plant is the wild rice, or wild oats, (*zizania clavulosa*.) It grows in Fox river, from its mouth to its source, and in all the ponds, lakes, marshes, and lagoons about the country. It is a great article of food among the Indians. The wild rice harvest is to them, what the wheat and corn harvest is to the Virginia planter. They encamp round the lakes and expansions of the river early in September, and lay up a store for the winter. It is excellent food, better than the southern rice, and is a mild diuretic. Thousands of ducks, even the canvass-back, are attracted by the rice. Would this wild rice not flourish if sown in the waters of the eastern and middle States? I think it would; and, if so, a valuable crop might be obtained from a great number of acres which are now almost useless.

The seasons most productive of disease are spring and autumn. I have never thought the marshes about this post produced disease till last fall. The Wisconsin overflowed its banks during the latter part of July of last year, submerging all the extensive marshes for two or three weeks; all except aquatic plants were killed. This was succeeded by excessively hot and dry weather during the month of August and part of September, when we had a number of cases of intermittent and remittent fever, which I think were caused by the decomposition of vegetable matter on the marshes. One thing I think remarkable here: complaints of the lungs, phthisis in all its forms, are less common here than at any post at which I was ever stationed. How shall we account for it? Is it the dry atmosphere?

The mean annual range of temperature at this post is 120°, with an extreme range of 133°; the thermometer registering in summer 104°, and in winter —29°. The mean annual tempera-



ture is  $44^{\circ}.80$ . Mean annual precipitation, 27.49 inches. The prevailing winds are from the north and northwest.\*

#### FORT CRAWFORD.

Fort Crawford, situated on the Mississippi, two miles above the mouth of the Wisconsin, is on Prairie du Chien. This prairie, lying in the angle formed by these two rivers, is about 10 miles long and 2 wide, terminating on the east by a range of abrupt hills about 300 feet in height. These bluffs present almost a naked surface, studded with boldly projecting rocks. The fort, which is about 300 yards from the Mississippi, is elevated 70 feet above its level. Directly in front of the fort is a marsh, which extends 5 miles up the river, and about as far down as the mouth of the Wisconsin. This marsh, or slough, which exists only during the low water of the summer and autumnal months, not unfrequently so abounds with putrid vegetable matter as to be extremely offensive. The soil, which is generally fertile, producing wheat, corn, rye, oats, and potatoes, abundantly, consists of a dark loam combined with lime and silex. Lead, iron, and copper are found at many points; and among the productions of the forest, different varieties of *quercus* (oak), *acer* (maple), *betula* (hitch), *salix* (willow), *juglans* (walnut), and *carya* (hickory), stand most prominent.

The mean annual temperature, deduced from 19 years' observation, is  $47^{\circ}.63$ , with a maximum of  $100^{\circ}$ , and a minimum of  $-32^{\circ}$ ; extreme range,  $132^{\circ}$ . Mean annual precipitation, 31.40 inches.

#### FORT SNELLING.

Fort Snelling, situated in the angle formed by the confluence of the St. Peter's and Mississippi, is elevated 94 feet above those waters, and about 820 feet above the level of the ocean. The St. Peter's, at its mouth, is 150 yards wide and 16 feet deep; and the Mississippi, at this point, is about 400 yards wide, but is much less deep than the former. The banks of the latter, up to the Falls of St. Anthony, a distance of eight miles, are about 200 feet high, the upper strata of which consist of limestone, and the lower of sandstone. Beyond the falls, the banks are less high, and the immediate valley of the river becomes more extended. The St. Peter's, which has its source about 500 miles from this point, courses through a valley, varying in breadth from one to three miles, which is marshy, owing to the inundations of the river. The surface of the surrounding country presents an undulating prairie, studded here and there with "islands" of timber. Large lakes, plentifully supplied with fish, are occasionally found. The soil, although sandy, is productive. These facts have been furnished by Assistant Surgeon John Emerson.

The mean annual temperature, deduced from a continuous series of observations for thirty years, is  $44^{\circ}.54$ , with a maximum of  $100^{\circ}$ , a minimum of  $-40^{\circ}$ , and an extreme range of  $140^{\circ}$ , the mean annual range being  $121^{\circ}$ . The mean annual fall of rain and snow, for twenty years, is 25.43 inches.

#### FORT ATKINSON.

In the absence of any special report respecting the topography of this station, the following brief remarks are quoted from Assistant Surgeon Wm. S. King's report of sick for the third quarter, 1840, shortly after the establishment of the post:

"Fort Atkinson is situated fifty miles west of Fort Crawford, on an elevated plat of ground between Turkey river on the north, and Spring creek on the south and east, the latter emptying into the former about three-fourths of a mile from the post. The elevation on the side next Spring creek is of crescentic form, and nearly perpendicular, commencing about fifty yards

\* The remainder of this report, consisting principally of a description of the barrack and hospital accommodations, is omitted, not being applicable to their present condition. The results of more extended meteorological observations have been substituted for those given in the original report.—C.

from the margin of the stream, and descending on the opposite side by a gradual slope to Turkey river, from which it is distant half a mile. Its height above those streams is 80 feet. The country between the station and Turkey river is woodland. On the west, south, and east, it is an open prairie, affording a fine view of from ten to fifteen miles in extent. Spring creek, as its name implies, has its origin in numerous springs not far distant; the water is used for drinking, and for culinary purposes. The soil is mostly calcareous. The cases of fever at this post, with few exceptions, can be traced to Fort Crawford."

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT DODGE.\*

By Assistant Surgeon Charles C. Keency: 1852.

While describing the geographical position of this post, it will be necessary to say, that in consequence of not being able to procure the necessary astronomical instruments for determining the true latitude and longitude, I had to calculate them from maps; consequently, my calculations may not be without a slight error—deviating a few minutes, either way, from the true meridian.

According to my calculations, we are in latitude  $42^{\circ} 28'$  north, and longitude  $17^{\circ} 1'$  west from Washington, which places us rather in the northwest corner of Iowa, on the Des Moines river, and near the junction of the Lizard forks.

The Des Moines is a large and rapid stream, taking its rise from numerous small lakes in the northwestern part of this State and Minnesota. Its average width is from one hundred to one hundred and fifty yards, with a rapid current, a limestone bottom, and tolerably clear water. The river is very tortuous in its course; but its general bearings are from northwest to southeast, running through the whole course of the State, and emptying into the Mississippi a few miles below Keokuk. It is considered navigable for light-draught steamers up to Fort Des Moines, and probably is up to this fort in high water. The river at this point forms a crescent, which bounds two sides of the fort, while a rolling prairie and a deep ravine, supporting a grove of timber, cover the remaining sides.

The physical aspect of the country about the post is beautiful and picturesque in the extreme. At two points of the compass, east and west, to the utmost extent of vision, a vast undulating prairie, supporting a luxuriant growth of flowers and grass, is in view; while nearly from the north to the south the majestic Des Moines is seen meandering through the boundless prairie, flanked on either side with high bluffs and ledges of rocks, supporting in many places a dense growth of timber of the choicest kind.

The general physical appearance of this vicinity and the country adjacent is of such a nature as to lead one to suppose that this prairie country has once been the bottom of a vast sheet of water, and at a period long subsequent to the Mosaic deluge. The deep ravines, embosoming small rivulets; the gentle undulations of the prairie uplands; the peculiar geological formations of the bluffs; the fossiliferous depositions on the broad prairie, and particularly of the plutonic and volcanic boulders (granite and trap) that are frequently to be seen on the open prairie, probably hundreds of miles from their parent formations, are almost conclusive evidences that the country, at no very great distant period back, was submerged. Some of these boulders are so large that they may be seen for miles, standing out in bold relief on the prairie. Their general surface is rough and uneven, with few signs of having been worn by rolling, which goes to show that they were transported (probably on icebergs) to their distant and isolated abodes. The uplands, with their *lacustrine*-like appearance, and the bluffs of the rivers, with their apparently modern sedimentary formations, also, are so many living witnesses to testify to the fact that at least this immediate vicinity was once a vast lake. Numerous physical and geological facts might be brought forward in corroboration of this assertion; but, as the limits

\* Fort Des Moines was occupied about three years, and then abandoned. It was at the head of navigation, on the Des Moines river. No medico-topographical report of the locality can be found in the Medical Bureau. C.



of this paper will not permit of more than a general sketch of the physical aspect of the post, and as it is foreign to my subject, I will proceed to give a brief description of the geological formations.

From the above remarks on the physical characters of this vicinity, it will be inferred that no subterranean convulsions, no upheavals, or any other volcanic actions, have visited and raised up the present formations in this part of Iowa; but, on the other hand, it can more easily be imagined that, when the waters covered the surface, the strata of the various rocks were gradually deposited, one upon the other, by the same process as is now daily going on before our eyes in the same formations.

The chief formation in this immediate vicinity is the aqueous, or sedimentary rock, including nearly all its varieties—the calcareous, the gypsum (sulphate of lime), silicious, and argillaceous rocks. The calcareous rock is the chief, and it may truly be said forms the backbone of all the other sedimentary and fossiliferous bodies of this class of rocks. It lies in detached pieces and in solid masses all along the shores of the Des Moines and its tributaries, forming the bulk of the bluffs and cliffs, and also the beds of the rivers.

Carbonate of lime seems to predominate over all the varieties of this rock. At many points, particularly on the small tributaries of the Des Moines, the form of stratification varies materially. At one point, a series of strata of carbonate of lime forms high bluffs; while, at another point, a stratum of carbonate of lime alternates with one of argillaceous rock; then, again, argillaceous and arenaceous strata are superimposed on layers of carbonate of lime. In many places on the Des Moines are seen beds of shale alternating with beds of lime strata. Not far from this post, and on the river, is an extensive bed of shale combined with argillaceous and calcareous matter. This rock has forced itself out of the banks of the river, at an angle of  $50^{\circ}$ . The great dip this stratification presents, I am led to believe, from the physical as well as the geological features, was brought about by the sliding of the earth, caused by the action of water. I am further led to this belief from the fact, that the stratification all around this district is nearly horizontal; and, also, from there being no marks or signs of internal commotions having occurred, no dislocation and distortion of strata. This bed of shale bears strongly the physical features of coal. Its stratification is well defined, and between many of its laminae are enclosed organic remains, many of which have strong impressions of various plants. These beds of shale (bituminous, I think) are quite numerous on the banks of the Des Moines, and are not unfrequently taken for rich beds of coal. I view them only as so many indications of an inferior quality of coal hidden in the banks.

On one of the small rivulets that empties into the Des Moines is a bed of gypsum (sulphate of lime), a soft, white and yellowish rock, with the stratification (as usual) nearly horizontal, and, like the other rocks, bearing N.W. and S.E. It appears to be free from the other varieties of rock.

In some of the bluffs are deep fissures and rents, and appearances of dykes, that would lead the superficial observer to suppose they were produced by subterranean convulsions and upheavals. A bird's-eye view of their geographical features will show that land-slides and the action of water were their origin.

The only palaeontological evidences observed in these rocks were the fossiliferous plants, and impressions in the shale deposits already spoken of. These fossiliferous remains were so indistinct as to render it impossible either to determine their class, order, or species.

As may be supposed, from the above formations, the metalliferous and other mineral indications are exceedingly few. The great requisites for the metalliferous productions, as trap, conglomerate, basalt, porphyry, and other crystalline rocks, are wanting. The only mineral this formation can produce (as far as my superficial explorations have gone) is coal; and this in such poor qualities, that an attempt to work a mine for profit would be of doubtful expediency.

From the above remarks on the geological structure, it is to be supposed that the general

surface of the country supports a good soil. In the bottom lands, bordering the rivers, and where the land has been frequently inundated from the frequent swellings of the streams, the soil is exceedingly rich and productive. It is, for the most part, composed of alluvial deposit lying on a bed of limestone; and superimposed upon this deposit is a thick covering of vegetable mould. The soil of the uplands differs somewhat from this. It consists of a black earth, composed of sand and clay intermixed with calcareous matter. It holds in composition less organic matter than that of the bottom land. But this soil, composed as it is of loam, marl, and here and there of infusorial earth, and having for a base a thick bed of calcareous matter, is capable of producing rich crops of corn, wheat, oats, &c., year after year, without any material drain on its fertilizing powers.

Next to the physical features of a country, and not second to it in point of health and prosperity, is climatology. I believe it is conceded by all, that a rich and productive soil, with an unequable and treacherous climate, is more pernicious to health, and less to be coveted by the agriculturist, than a less fertilizing soil with a good climate. Such, truly, ought to be so; for while the soil is amendable through the medium of the arts, climate, on the other hand, is beyond the reach of art and science.

Before speaking of the climatic characteristics of this post, it will be as well to premise my remarks by saying that this post is not quite two years old, and only part of this time have meteorological observations been taken; consequently, I can only speak of the climatic peculiarities of one year, which peculiarities may not be in accordance with a series of years of the past or to come. But still, from a careful study of climatology, and with the physical features of a country before the eye, one is enabled, in a great measure, to form a tolerably correct opinion of the general character of the climate of a country.

By reference to the Meteorological Register, it is found that the past winter was rigorous and changeable in the extreme; not rigorous from the low degree to which the mercury would at times fall, but from the constant hurricane-like winds that rushed from the north, and swept over the prairie, chilling the innermost blood, both of man and beast. The same register shows that this last month (June) was subject to great thermometric changes. During the month of January, 1852, the mercury fell to the lowest graduated degree of our thermometers—namely,  $28^{\circ}$  below zero; and had the graduation been still lower, (or the thermometer longer, as some are wont to have it,) the mercury would, in all probability, have fallen to  $30^{\circ}$  or  $35^{\circ}$  below zero. Last month, as the table shows, the mercury rose to  $97^{\circ}$  in the shade. During the summer months, the wind almost incessantly blows a gale from the south, which has its salutary effects, as will be seen when we come to speak of disease, &c.

It is needless to remark, that these great atmospheric changes are attributable, in the main, to the following physical causes: At the north, south, east, and west, all is one vast stretch of prairie, and nowhere is there a great body of water to modify and mollify the temperature by evaporation and condensation. Even during the greater part of the summer months, there are no clouds in the sky to parry off the piercing rays of the sun.

The springs are also exceedingly changeable and uncertain. The agriculturist will experience many reverses in his fields, arising from the great atmospheric vicissitudes. He may retire to his bed with his heart light from the growing and thrifty appearance of his crops, and in the morning he will go out and return with his heart saddened and chilled by the frosts of May and June. But there is one redeeming feature in this treacherous climate, which, in despite of the great and sudden changes, renders it quite salubrious. It is this: the atmosphere is exceedingly dry at all times. The salutary influence this hygrometric feature has, will be referred to when we come to speak of disease, &c.

As soil and climate are the fountains from which disease, in its general sense, takes its rise, it will not be out of place here to speak briefly of the nature and causes of the various maladies that occur at this post.

The register of sick shows remittent and intermittent to be the prevailing fevers at this



post, and diseases of the respiratory organs to predominate over all others. As regards remittents and intermittents being the prevailing fevers at this place, the fact not only holds good here, but has generally been so at all the various stations at which I have been, particularly at those posts where the cultivation of the soil has been one of the duties of the command. The secret may be this. trees are felled, the soil is turned up, and a greater surface exposed for the direct rays of the sun to promote decomposition of the tree-tops, the turf, and other vegetable matter brought to light. As a general rule, at all new military posts (and I think the same will hold good in all new agricultural districts) the people are more exempt from miasmatic fevers the first year than the second and third. This exemption may be owing to the cause of the malarious influence brought to light by art (if I may so speak) not having had sufficient time to become thoroughly developed by the action of the sun, and other causes, to make its impressions on the nervous and sanguiferous systems. But not so at posts and in old agricultural districts where there are already natural and living sources for the generation of miasmatic poison. Here the subject immediately imbibes and experiences the effect of the poison in a few weeks, or even in a few days. Adopting the old notions of vegetable decomposition in its various forms as the "*fons et origo*" of bilious remittents and intermittents; and while discarding the cryptogamous and other fanciful theories of the present day, I am prepared to state that all the remittents and intermittents that have occurred at this post were caused by the imbibition and absorption of miasmatic poison generated by the vegetable decomposition in the bottom lands, where gardening and farming have been carried on. Nearly all the men who have been the subjects of these fevers were the ablest bodied men of the command, and, when on other duty in the uplands, enjoyed perfect immunity from those fevers; but no sooner would they be detailed for horticultural duty, than they would report sick with one of these fevers. I am aware that some late writers are endeavoring to prove that miasmatic poison is not the source from whence these fevers arise; and, as irrefutable arguments, they cite instances of armies that have been decimated by these forms of fevers, in those places where there was not the slightest evidence of vegetable decomposition, and other sources for the generation of miasmata. But they seem to forget, or at least leave out the important fact, that these same armies, during their long and rapid marches, have encamped one or more nights in miasmatic districts, where the body has taken in the malarious seeds; and after two months, or two weeks' fatigue and exposure to a scorching sun, these seeds have grown up, the fruits of which were a congestive remittent and intermittent fever.

The sick report shows but few cases of rheumatism. Considering the great range which the thermometer has here in all the four seasons, it might be supposed that rheumatism would form a conspicuous part in the catalogue of diseases. But, on the contrary, it is quite rare here, owing, in all probability, to the hygrometric feature of the atmosphere. At all seasons of the year, and during the greatest thermometric changes, the atmosphere is exceedingly free from moisture.

Most of the diseases of the respiratory system were of the mildest nature, and in the majority of the cases were unaccompanied with febrile action. The only diseases of the chest, involving the substance of the lungs and pleura, were imported cases. The mildness of the diseases of the thoracic organs may also be attributed to the general dryness of the atmosphere during the great thermometric changes.

Dysentery and diarrhœa, in chronic forms, are not known here; and dysentery, in its acute form, is rare.

To sum up, the health of the command is exceedingly good at all times. The following may be the causes why it is so: First, the peculiar hygrometric feature of the atmosphere, being free from moisture at all times; secondly, the pure and limpid waters, both of the running streams, and particularly of the numerous springs that gush out of the bluffs, and from the bottom lands, some of which are slightly impregnated with the salts of iron and sulphur; thirdly, to the constant winds that carry off all effluvia, as fast as generated, to distant parts;

and also to the constant employment of the men in their various duties; to their wholesome diet (salt and fresh meat, combined with a due proportion of vegetable matter); and particularly to *thoroughly baked bread, and no whisky.*

As far as my experience has gone at military posts, I have found bread badly baked, and an undue quantity of alcoholic drinks, to be the chief originators of the diseases of the digestive organs. Too much stress cannot be laid on the importance of having bread thoroughly baked. I have not unfrequently seen two-thirds of a command at a time afflicted with diseases of the digestive organs, arising from one single batch of badly baked bread. The company baker and bake-house should be daily inspected; and as the art of making bread is a chemical process, none are so competent to make this inspection as the medical officer of the post. Stringent orders should be issued, enjoining on the commanding officer of the post to see this important inspection daily made.

As a full development of the FLORA does not take place before the latter part of July and August, only a general outline of the botanical characters can be expected here. The botanical characters that merit special notice, are the following: The wild rose and strawberry, in this vicinity, seem to be twin brothers, as they are found together, growing in great profusion around the borders of the prairie and timber. The fleur-de-lis (*iris*) is found growing in marshy ground, and flowers in June. The blue violet (*viola cœrulea*), the blazing star, and several other species of the liatris, with their long spikes of purple flowers, the calla palustris, the wild turnip (*arum*), the petalostemons, with their luxuriant heads of violets, the cone-flowers (*radbeckia*), the wild sun-flower (*helianthus*), the golden rod (*solidago*), the eye-bright (*euphorbia corollata*), &c., are found growing in the uplands and bottom lands, and add lustre to the spring and summer dress of the prairie. The wild ginger (*asarum Canadense*) grows in the ravines, and flowers in May and June. There is one plant, everywhere to be found on the prairie, that at all times attracts the attention of the traveller, not only from its height and brightness of flowers, but because its leaves are endowed with peculiar qualities. It is the compass, or polar plant (*silphium laciniatum*). It is a plant that grows from one to five feet high, rather coarse in its general aspect, and with a ferny leaf. The flower is like that of the sun-flower. This plant is celebrated for the peculiar property of its leaves, pointing due north and south. Some have said the leaves do not always point north and south, but go with the wind. From many and careful observations on this plant, I can say that its polarity can be as much relied on as the magnetic needle; and were I to travel a long distance over the prairie, I would sooner trust to the polarity of this plant than to the magnetic needle, as the former is not influenced by local attraction, while the latter is. As for the leaves being influenced by the winds, I have often seen the stock bent near to the ground by the force of the winds, while the leaves were still pointing north and south. The cause of this peculiar property of the leaves is inexplicable. The magnet reveals none of its secrets, nor does dissection. But still, I am inclined to think that its polarity is dependent on magnetism, influenced by the action of light on its leaves.

Among the shrubs may be mentioned the wafer-ash (*ptelea trifoliata*), being an ingredient in the celebrated Indian tobacco. The red bud (*cercis Canadensis*) puts forth its flowers before its leaves. The burning bush (*euonymus atro-purpureus*), and the coffee-tree (*gymnocladus Canadensis*), also, are found in the timber. In addition to the above, there are in this vicinity the gooseberry (*ribes Missouriensis*), the crab-apple (*pyrus coronaria*), the wild plum (*prunus Americana*), the black walnut (*juglans nigra*), the butternut (*juglans cinerea*); the two last adorn the forest with their rich and luxuriant foliage.

The beautiful groves of timber that skirt the prairie and rivers are composed chiefly of the following trees: With the addition of the black and white walnut, are the black oak (*quercus nigra*), white oak (*quercus alba*), the sugar maple (*acer saccharinum*), the bass-wood (*tilia*), the white poplar (the American aspen), the white elm (*ulmus Americana*).

This country has so long been the abode of the red man, and his incursions have been so



frequent over the prairie, and in the forests, in pursuit of the buffalo, the elk, the deer, &c., that nearly all of these animals have forsaken this ground, and gone farther west and north; and the few that are occasionally seen here, are so wild that it is with the greatest difficulty they can be brought within reach of the rifle-ball. The buffalo is sometimes met with on the open prairie, a few miles west of this post. They appear to be the stragglers of the buffalo army, and wander off, into, or near by, the settlements. The elk is seen in herds of two and three hundred, about the head waters of the Lizard river, some thirty miles from here. Hunting parties frequently pass by our post in pursuit of their young. The parties drive with them cows, and, when the young elk are taken, the cows suckle and protect them as if their own offspring. They are then driven into the settlements, and, when grown up, are trained to the harness. The deer is frequently seen bounding over the prairie from one grove of timber to another. The prairie is their summer's retreat, while in winter they seek the more comfortable and secluded habitations of the forest. The black bear is now and then met with, prowling about the outskirts of the post. The prairie wolf is a frequent visitor during the fall and winter. He is the most stupid of all animals, and is harmless to everything except to the hen-roost and sheep-fold. During the spring and fall, the rivers and sloughs swarm with the wild goose, the brant, and numerous species of ducks. They make their appearance in the spring, as soon as the ice is out of the river, sport about for two or three weeks, and then proceed north—following the course of the rivers, where they lay and hatch. On the first intimations of cold weather, they return back to these waters, where they again remain for one or two weeks, and then proceed to a warmer and more genial climate.

The wild turkey—the king of the feathered tribe—makes his appearance in these forests in the fall, and is so wild that none but the best of shots take him.

The streams seem to be only moderately supplied with the finny tribe. The pickerel, the pike, the cat, and the bass, are the principal, if not the only fish that swim in these waters.

On the tributaries of the Des Moines are numerous beaver-dams, where large numbers of these most sagacious of all animals make their winter-quarters. In the immediate neighborhood of these dams, acres are cleared, and trees, from one to eight inches in diameter, are felled by the teeth of these animals. No animal is more sagacious and ingenious than the beaver. The architectural and engineering tact displayed in the construction of these dams would reflect credit on a genus of animals much higher on the scale of existence than they.

But few varieties of reptiles are seen here. The prairie rattle-snake presents the same physical characters as the common rattle-snake everywhere in the United States. The moccasin, a venomous snake, is also found on the prairie, in common with the striped snake. The above two are the only venomous reptiles found in this district. The bull-snake (*boa Americana*) is common on the prairie and in the timber. He grows to an enormous size, and is frequently found to be ten feet in length. This reptile is harmless to man, but is a deadly enemy to the rattle-snake whenever they come in contact. This snake is held in great esteem by the Indian, and killing it would, by him, be considered more than sacrilege. Well might it be so esteemed by the white man, as they are so great a scourge to that most venomous of all reptiles—the dread of the prairie.

The country, as yet, is new and very sparsely settled. There are scarcely twenty persons in as many miles of the post. The few who have settled in this district are chiefly from Missouri and Indiana. Before the establishment of this post (in the summer of 1850), there were not half a dozen settlers this side of Fort Des Moines. The few who have located here are engaged in the cultivation of the soil. They are of the poorest class of settlers from the above States; and, judging from the general aspect of their farms, from their lean, lank, and half-fed cattle, their squalid and hungry-looking children—huddled in the same room in common with pigs, chickens, &c.—one would be apt to infer they were more indolent than enterprising, and more filthy than cleanly.

The red man has long since deserted these his old hunting-grounds, and gone to seek abodes

farther west, where the buffalo, the elk, and the deer roam in greater numbers and with less fear of the rifle. A few scattering bands, however, principally of the Sioux and Chippewa tribes, are still hanging on the outskirts of this State. During the winter season, small parties of these scattered tribes come into the neighborhood of this post for the purpose of hunting, trapping, and trading. The same bands not unfrequently make incursions into the settlements, carry off cattle, horses, &c., and commit other like depredations on the defenceless inhabitants. In their nature, they are treacherous and predatory; and even the small parties who visit us, and who receive many hospitalities, are not wanting in the above characteristic traits; and were it not for fear of the bayonet, they would, undoubtedly, practise some of their barbarous cruelties on those from whom they receive hospitalities. When driven to extreme hunger, there are no bounds to their inhumanity; they become cannibals in the strictest sense of the word. The following facts, which I have from undoubted authority, and almost from an eyewitness, go to show that even those on the borders of the States are capable of practising the most sickening and inhuman customs. During the winter of 1850-'51, a band of this tribe (Sioux) were wintering in the forests in the northwestern part of this State. There being no snow to track the footsteps of the deer, they were in consequence driven to the very verge of starvation. In one family of this band were a father, mother, and three children. The mother doted on her youngest child, a boy of three years. On him rested her fondest hopes, and on him were lavished her dearest affections. Being driven to despair by the torturing pangs of hunger, she caressed him, folded him in her arms, and put him into a sleep. No sooner was the mother's darling boy in a sweet sleep, when the concealed knife was taken from her bosom and drawn across his throat—severing all to the very bone. She quenched her thirst by sipping his warm blood, and satisfied her hunger by feeding on his quivering flesh. In the course of ten or twelve days, the pangs of hunger returned. Her second boy, a youth of ten years, like the first, was made the food of her morbid appetite. After the lapse of two weeks, the pangs of hunger returned again, but with redoubled vigor. She resolved on destroying her third son, a boy of sixteen years of age, the firstborn and the father's favorite. By her caresses, he also was put to sleep, and, while asleep, she poured molten lead into his ear. This more novel way of extinguishing life proved fatal to her. The pangs soon awakened the boy, and caused him to scream aloud. The father, although frantic with hunger, was nevertheless attracted by the cries of his beloved boy. The deed was still fresh before him. His eyes were then opened to the fate of his lost children. He clenched his tomahawk and felled the mother to the ground. His knife soon finished the stroke, by taking her scalp from her head. He, in turn, feasted on her carcass.

There being so few Indians about here, it will be impossible to collect any vital statistical knowledge worthy of note. As far as I am informed, the numerous Indian tribes west and north of us are fast becoming extinct by cholera and smallpox—by the latter disease in particular. As far as my observations have gone with the Indian tribes heretofore, I have generally observed that when disease, particularly a fever, takes hold of the Indian, (if he is at all sick,) he succumbs to the fever in spite of the "medicine man." Their mode of living, habits, and customs, are all conducive to staying off disease—particularly in its chronic form. Their articles of diet alone, could they only be introduced into civilized circles, would banish dyspepsia in all its protean forms; the name itself would soon be forgotten.

There is a common article of diet, principally used by the half-breeds employed in the Hudson Bay and American Fur Companies on their long marches, and who also subsist on it at their permanent winter-quarters. It supplies both the place of bread and meat, and, for its remarkably nutritious qualities, ease of digestion, and for the great facilities of transportation which the compactness and small bulk of this article afford, make it well worthy the notice of the Department. It is called *pemican*. Lieutenant Corley, U. S. A., who has subsisted on it for some time, and to whom I am chiefly indebted for the information of this invaluable article of diet, says it is composed of buffalo meat and buffalo tallow. The process for preparing it is this:



the buffalo meat is first thoroughly dried in the sun, and then pounded until it is about the consistence of meal: the tallow is melted, and freed from all impurities, and is then poured on the meat and well stirred. The proportions should be about equal, or, if any difference, there is a little more tallow than meat. The mixture, being well stirred, is then poured into sacks made of untanned buffalo hide, and allowed to cool; no salt is used—probably to prevent thirst. The sacks contain from twenty to forty pounds, for convenience of transportation. The mixture being poured in the sacks while in a liquid state, it, of course, packs itself into a small space. It keeps well without salt, and, when properly made, will be perfectly good at the expiration of a year. This article is used almost entirely by the fur-traders of the Hudson Bay and American Fur Companies as their only food when travelling. Lieutenant Corley also says he was informed by the traders of the fur companies, that they know of no article of food that could supply its place in convenience of transportation, in cheapness, and in nutritious qualities. It is also highly palatable.

Some estimate can be made of the quantity of this article it would take to sustain a healthy working man, from the quantity it takes to sustain the train-dogs the fur-traders use. The dogs they use for drawing their sledges and carrying their packs, are of a large breed, and travel fifty miles a day; they give to the dogs one pound of pemican a day; this is as much as they can eat, and it not only keeps up their strength, but keeps them fat.

Knowing that one pound is sufficient to sustain a dog of the above description, and while travelling with a heavy burden fifty miles a day, it might be supposed that fifteen pounds would be an ample allowance for a soldier on twenty days' march, carrying with him, at the same time, his musket, his knapsack, and his pemican.

I can conceive no other article of diet to be so invaluable to the soldier as the above, where transportation is limited, and difficult marches are to be made, as inevitably will be the case hereafter, with our whole army, on the great prairies east and west of the Rocky Mountains.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT RIPLEY.

By Assistant Surgeon J. Frazier Head: 1852.

Fort Ripley is situated in latitude  $46^{\circ} 10' 30''$  N.; longitude  $94^{\circ} 18' 30''$  W., upon the west bank of the Mississippi, elevated 20 feet above that river, and probably\* about 1,100 feet above the Gulf of Mexico. The little river Nokay empties into the Mississippi from the east, at about 300 yards north of this point. The post is built upon a sandy plateau, partially drained by shallow ravines at its northern and southern extremities, terminating abruptly at the steep river bank, and to the west gradually sloping toward a narrow swamp, about half a mile in rear of the fort. Beyond this is a range of thickly wooded hills, rising to a height of 100 or 150 feet, which slightly shelter the post from the northwest winds of winter. To the westward of the hills, again, is a belt of broken surface, so thickly covered with woods and swamps, that since the establishment of the post no white man has ever traversed it to any considerable distance. Above and below the fort, the river is skirted by a narrow belt of swampy land, usually partially inundated in spring, supporting a growth of linden or bass-wood (*tilia*), elms (*ulmus*), maple (*acer rubrum*), and birch (*betula*), which, with pine and poplar on the higher grounds, and a luxuriant undergrowth of hazel and other shrubs, constitute the sylvia of this immediate neighborhood. Over and around the site of the post, a fire has swept in former years, leaving hundreds of scorched and decaying pines still standing, or encumbering the ground.

On the east side of the Mississippi (here about 180 yards wide), a gently undulating, sandy, and barren prairie, from a few hundred yards to three miles wide, extends from the mouth of

\* The mouth of the Crow Wing river, about six miles above Fort Ripley (the nearest point the elevation of which is known), is 1,130 feet above the level of the Gulf of Mexico.

the Nokay to the southward, bordered by a growth of oaks and pines along the Mississippi, and by a range of low hills, partially covered with oaks, on the west. Opposite to the post is a strip of land less sterile than the rest, which has been for several years under cultivation, and part of which is also liable to overflow in the spring. East of the hills above mentioned, lies a more undulating tract, interspersed with swamps abounding in "tamarac" (*larix Americana*).

The trees above enumerated constitute the prevailing growth of this region; the oaks are chiefly the "burr" oak and "black jack" (*quercus nigra*), with a few white and red oaks of stunted growth; and of the species of trees used in the arts, the wood is generally of very inferior quality. The sugar-maple (*acer saccharinum*) abounds within a few miles of this place, and in most of this portion of Minnesota. The chestnut, walnut, and beech are unknown, as is every species of fruit-tree, wild or cultivated.

The *soil* generally is a sandy alluvium. No rock has been found within many miles, except scattered boulders of granite, from which was obtained the little stone necessary in building the fort. The land, at least when first cultivated, is more productive than might be supposed, being what farmers term "warm," and adapted to the short summers. The *water* is moderately soft, pure, and wholesome.

The *climate* is subject to great variation, as will be seen by a reference to the meteorological register. The extremes of temperature observed are 96° (in August, 1849,) and —39° (January 18th, 1852). The latest killing frost in spring was on June 17th, 1849, and the earliest on August 14th, 1851\*. A variation of temperature of 30 or 40 degrees in a few hours is not uncommon. On the 11th and 12th of February, 1851, the mercury rose in about 32 hours, from —34° to 35°—a range of 69 degrees. Fires are necessary to comfort during a part of every month in the year, except, occasionally, July and August; and cattle must be foraged from seven to nine months.

The phenomena of spring, when once begun, often progress with great rapidity; and from the climate of winter, the region sometimes seems to pass at once into that of mid-summer. Lettuce (germinated in hot-beds) and radishes are fit for the table, in favorable seasons, about the middle of June; wild strawberries, which are found here in great abundance, ripen from the 15th to the last of the same month. Green peas are ready for use about the second or third week in July. Oats and potatoes appear to flourish, though a large proportion of the latter were destroyed last year by the "rot." Maize is considered a very uncertain crop, owing to the shortness of the summer. The experiment of planting winter wheat was tried in two cases last autumn, but it would seem with very indifferent success.

From about the last third of August till the ground is covered with snow, which usually occurs in November, the weather is generally clear and delightful, with a dry, bracing atmosphere, and equable temperature. After the first considerable fall of snow, the earth's surface remains constantly covered for about five months. The average depth of snow, as roughly estimated from the three winters since the occupation of the post, is from 2 to 3½ feet. An idea of the severity of the winter may be formed from the fact that *more than double* the government monthly allowance of fuel is required to warm the quarters, though used in large stoves.

To the FLORA of this region but little attention has been paid; and I leave this part of the subject to subsequent and more competent observers. It may be remarked, however, that the wild raspberry (*rubus odoratus*) is occasionally met; gooseberries (*ribes grossularia*) are common; the blue-berry (*vaccinium* —), a small fruit resembling the whortleberry, is quite abundant on the hills east of the Mississippi, ripening in July. Wild rice (*zizania aquatica*) is found in many of the lakes, which in autumn are the haunt of thousands of wild-fowl. This plant, which forms an important part of the food of the Indians, has been cut off in many places around this post, for two years past, by the unusual height of the waters. The dandelion (*ta-*

\* This was sufficient to check the growth of pumpkins, squashes, and similar vines, but more hardy plants survived. The heavy autumnal frosts usually begin from the 20th to the last of September, after which time vegetable life is at an end for about six months.



*taxacum dens leonis*) is entirely wanting above the Falls of St. Anthony, though abundant at Fort Snelling.

The MAMMALIA most frequently found are the prairie and large grey wolf (*canis latrans* and *C. occidentalis*),—the former by far the more abundant; the red deer (*cervus Virginianus*), not very numerous; the ground squirrel (*sciurus striatus*), field-mouse (*mus leucopus*?), weasel (*mustela erminea*), musk-rat (*fiber zibethicus*), badger (*meles Labradoria*), and porcupine (*hystrix dorsata*); and occasionally the otter (*lutria Braziliensis*), marten (*mustela martes*), mink (*M. lutreola*), skunk (*mephitis Amer.*), lynx (*lynx Canadensis*), and red fox (*canis fulvus*). Other varieties of fox are taken somewhat farther north, (*C. decusatus*, *C. argentatus*, and *C. cinereo-argentatus*), and may inhabit this neighborhood. The black bear (*ursus Amer.*), though found in the surrounding region, has never been seen in the immediate vicinity of the post. The moose (*cervus alces*) and cariboo (*C. tarandus*) are said to be occasionally seen at about 150 miles north, and the elk (*C. Canadensis*) on the prairies 30 or 40 miles west of this place. The grey squirrel (*sciurus Carolinensis*) is not found in any part of the Territory. The buffalo (*bison Americanus*) does not approach within one or two hundred miles. In the autumn of 1848, the varying hare (*lepus Virginianus*), vulgò "white rabbit," was very abundant; but during the following year (the winter of which was not unusually severe) they almost completely disappeared from a region for many miles around this point. Many of the Indians, who depend much on these animals for subsistence during the winter, were, consequently, reduced to actual starvation.

Of birds, the following species have been identified: The golden eagle (*falco fulvus*), bald eagle (*F. leucocephalus*), owl (*strix Virginiana*), meadow-lark (*sturnus ludovicianus*), red-winged and cow blackbirds (*icterus phæniceus* and *I. pecoris*), crow blackbird (*quiscalus versicolor*), raven (*corvus corax*), crow (*C. Amer.*), blue jay (*C. cristatus*), chickadee (*parus atricapillus*), cedar-bird (*bombycilla Carolin.*), king-bird (*muscicapa tyrannus*), pewee (*M. fusca*), thrush, (*turdus rufus*), robin (*T. migratorius*), yellow-bird (*sylvia æstiva*?), blue-bird (*sialia Wilsonii*), rare; snow-bunting (*emberiza nivalis*), wood-peckers (*picus auratus*, *P. erythrocephalus*, *P. pubescens*), king-fisher (*alcedo alcyon*), swallow (*hirundo rufa*), whip-poor-will and night-hawk (*caprimulgus vociferus*, *C. Amer.*), pigeon, (*columba migratoria*), "pheasant," or "partridge" (*tetrao umbellus*), grouse (*T. cupido*?),\* golden plover (*charadrius marmoratus*), killdeer, (*Ch. vociferus*), crane (*grus Canad.*, Bonap.), green heron (*ardea virescens*), curlew (*numenius longirostris*), sandpipers (*tringæ*), yellow-legs (*totanus vociferus*), smaller do. (*T. flavipes*), peet-weet (*T. macularius*), upland plover (*T. Bartramii*?), snipe (*scolopax Wilsonii*), a few woodcock, (*Sc. minor*), rail (*rallus* ———), coot (*fulica Amer.*), horned grebe (*podiceps cornutus*), terns (*sterna*, several species), goose (*anser Canad.*), brent (*A. bernicla*), loon (*colymbus glacialis*, *mergus merganser*, *M. cucullatus*). Ducks of the following species, and, doubtless, others not identified: The golden-eye (*fuligula clangula*), scaup duck or blue-bill (*F. marila*), buffel-head (*F. albeola*), dusky duck (*anas obscura*), mallard (*A. boschas*), summer duck (*anas sponsa*), and teal (*A. discors* and *A. crecca*). The ducks† pass this point nearly in the order of the above enumeration, on their way northward, the first appearing about the middle of April; and return, nearly in an inverse order, late in August and early in September. A few individuals of nearly all the above-mentioned species appear to breed in this latitude, as does also, occasionally, the Canada goose. Lingering for a few weeks about the rice-lakes in this vicinity, where they acquire a fine condition and flavor, they continue their course to the south in October and November, by the middle of which month the last of the migratory tribes have disappeared; and the grouse

\* This bird, at first rather rare, but now rapidly multiplying in this vicinity, differs somewhat in plumage, and perhaps in its habits, from the descriptions of *T. cupido*. It is possibly *T. phasianellus*. Never having examined either species before coming to this station, and possessing neither plate nor a good description of the latter bird when specimens were procurable, I am at present unable to determine the question.

† The canvass-back and red-head (*F. valisneriana* and *F. ferma*) have never been observed here, though both are frequently met at Fort Snelling.

having retired into the recesses of the forest, the raven, blue-jay, and snow bunting are left apparently the sole feathered inhabitants of this desolate region.

The *reptiles* have scarcely been noted. Of serpents, the only species seen are the common "garter-snake" (*coluber sistralis*), and a species of adder. The rattle-snake, if ever met above the Falls of St. Anthony, must be very rare. Two are reported to have been killed at the Sac rapids, about 50 miles south of this place.

The *fish* most abundant in the Mississippi at this point, and in the neighboring streams and small lakes, (which appear to be but scantily supplied with them,) are the "glass-eye" Ohio "salmon" or pike-perch (*luciperca Amer.*), lake bass (*grystes nigricans.*), and rock bass (*centrarchus æneus*), or species much resembling them: yellow perch (*perca flavescens*), of small size and somewhat rare; a large species of sun-fish (*pomotis appendix*), pike, weighing from one to eight pounds (*esox vittatus.*), small cat-fish (*pimelodus*), and a variety of suckers, &c. (*cypripinidae*). The gar-pike (*lepidosteus*) has never been seen, nor are any of the *salmonidae* found in the streams falling into the Mississippi north of the Falls of St. Anthony. A species of white-fish, called by the Indians *tûlabie* (a *coregonus.*) is taken, however, in some of the lakes nearer to the sources of this river. A large pike, specifically distinct from that above mentioned, and weighing from eight to forty pounds, is occasionally taken here, and more frequently in the river Minnesota. Two specimens captured here weighed, respectively, eighteen and twenty-eight pounds. The only one examined seems to differ both from *E. boreus* and *E. estor*.

The entomologist would find a wide field for research in this region. Insect life here appears to compensate for its brevity by its astonishing activity. During the short summer, the woods and prairies swarm with insects, among the most noticeable of which are the mosquito, the large "horse-fly," and the "black fly"—a small, dipterous insect, with black body and white legs. The last two species inflict almost inconceivable torture on the domestic animals, effectually keeping in poor condition those turned out to graze, and obliging the farmer regularly to make a large smoke at night to windward of his cattle-yard. The mosquitoes are said to be more abundant here during June and July, than in the swamps of Louisiana, and are a most serious annoyance, both by day and night, to those whose pursuits call them much abroad. The honey-bee is unknown here, but is reported to have appeared in the southern portion of the Territory within a few years.

Of sickness in the garrison, happily, but little is to be said, beyond a few remarks explanatory of the accompanying tabular statement.\* Under the head of intermittent fever, are embraced 10 cases of quotidian, 18 of tertian, and 3 quartans. That of diseases of the digestive system comprises 2 cases of common cholera, 24 of diarrhœa, 12 of acute dysentery, 25 of dyspepsia, 20 of constipation, and 4 of tonsillitis. Those of the respiratory organs are, bronchitis acuta 7, catarrhus 31, phthisis 1, pleuritis 1, pneumonia 6; of the brain and nervous system, cephalalgia 1, delirium tremens 1, epilepsia 1; of the genital organs, 2 of gonorrhœa; of the fibrous and muscular structures, 18 pernio, 18 acute and 23 chronic rheumatism—with 28 abscesses and 3 ulcers; and under the head of "all other diseases" are included debilitas 5, ebrietas 6, hemorrhoids 2, hemeralopia (night-blindness) 1, morbi cutis 4, ophthalmia (generally mild catarrhal conjunctivitis) 21, otitis 3, one tumor of uncertain character, one case of frozen lower extremities, and 7 "morbi varii."

It should be observed that *all* the cases of intermittent fever (none of which were severe) occurred in recruits arriving from Jefferson Barracks, and every case was satisfactorily traced to a residence in other localities; no instance is known of the disorder having originated in the Territory: and that, although the post is surrounded by influences (in addition to the very imperfect police incidental to an unfinished fort) which appear in more southern latitudes to favor the development of "malarial" disorders, no disease can be traced to a local cause. In

\* The "tabular statement" is omitted. Its form cannot conveniently be adapted to the pages of this volume, and it is believed that the analysis of its contents, given in the report, answers every practical purpose. The statistics are included in the consolidated abstract for this region.—C.



fact, throughout this region, a residence in the midst of swamps seems quite as salubrious as one upon higher ground.

The three summers during which the post has been occupied have been marked by the prevalence of dysentery and diarrhœa—to a greater extent among civilians employed at the post, and residents in the neighborhood, than among the troops. Although the sudden variations of temperature, particularly the alternation of hot days with cold nights, might be considered amply sufficient to account for this tendency, these diseases are said not to have prevailed extensively in the Territory previous to the year 1849; and their frequency of late years should probably be referred to the epidemic influence which seems to have extended more or less over the whole continent, rather than to any local causes.

Of the 41 cases of rheumatism reported, none were severely acute, nor obstinately chronic. Nine-tenths of the whole might more properly have been reported as "sub-acute." No case seemed to demand venesection; most soon yielded to the internal use of opiates, and friction with anodyne liniments.

The case of hemeralopia was successfully treated by 24 hours' seclusion in perfect darkness.

The annual ratio of cases treated, for three years, is 1,734 per thousand of mean strength; but deducting 31 intermittents and 44 mechanical injuries (both of which should obviously be omitted in estimating the salubrity of the situation), this ratio is reduced to 1,354 per thousand.

But one death from disease—that of a feeble old soldier from pneumonia—has occurred in the troops of the garrison since the occupation of the post (April 19, 1849), being an annual ratio of about  $\frac{1}{2}$  per cent. The period of observations is probably too short to authorize general conclusions.

The inhabitants of this portion of Minnesota, as a class, are temperate, industrious, and healthy. The population, though rapidly increasing by immigration, is sparse. The nearest settlement to this place is at the small trading-post of Crow Wing, six or seven miles distant. In a region chiefly settled within two years past, and among a population so scattered, the collection of satisfactory vital statistics is almost impossible. No record has been kept of diseases and deaths, which have been but few among adults, and the latter chiefly from dysentery. This disease, during August and September, 1851, was almost universal among children for many miles around this point, and fatal in a large proportion of cases. Notwithstanding the absence of numerical bases, and of a sufficient number of facts upon which to found general deductions, the opinion may be ventured, that the ratio of infantile viability will be found extremely low throughout Minnesota. Four deaths of children have occurred at this post alone within three years, or four times as many as among the troops, in a far less number; and the mortality in this class of the civil population generally, has probably been quite as large as here.

The Indian tribes in the vicinity of Fort Ripley are the Ojibways (Chippeways) and Winnebagoes. Though the post is situated within the territory assigned to the latter, an Indian of this tribe is but rarely seen at the garrison. A physician in the employ of the government resides among them, and a note has been addressed to him requesting any information which it may be in his power to communicate concerning them. The statement, which he has kindly promised, will be forwarded as soon as received.

The Ojibways live in scattered bands—none in this immediate vicinity, their agency being about 150 miles north of the fort: but having no physician residing near them, individuals often apply here for medical aid. Their prevailing diseases appear to be bronchitis, dysentery, and diarrhœa. One case of tubercular phthisis has been seen. Gonorrhœa prevails to some extent, but, so far as observed at this place, of a mild character. I have never seen nor heard of a case of syphilis among them.

In November, 1850, a large number of these people (probably three or four thousand) were assembled at their agency at Sandy Lake for payment. Many of them had come from a considerable distance, and, not expecting a long detention, were but scantily provided against the

inclemency of the weather, but do not appear to have suffered generally from disease before their arrival at Sandy Lake, where they were obliged to wait for several weeks before receiving their annuities. The provisions there issued to them are credibly reported to have been of the vilest description, and insufficient in quantity. The effect of such diet, combined with exposure, soon showed itself in the prevalence of dysentery to a fearful extent; and no less than 150 deaths are said to have occurred among them before they dispersed, which number is estimated to have been increased to 300 on their way to their homes. Upon whom the responsibility of this infamous transaction rests, this is not the place to inquire, nor does the writer know; but there can be no doubt that the majority of these deaths were immediately caused by the damaged provisions which hunger forced them to consume.

Cases of diarrhoea and dysentery are said to have been rare among the Ojibways previous to the autumn of 1849, since which time they have been quite common.

If, notwithstanding its length, this report seem meagre and unsatisfactory, it will readily be understood that a district so thinly settled is somewhat barren in a medical as well as a literal sense.

The following letter from Dr. David Day, respecting the vital statistics of the Winnebago Indians, accompanied the foregoing report of Assistant Surgeon Head:

WINNEBAGO AGENCY, *July 5, 1852.*

SIR: In answer to your request, I proceed to give you such information in regard to the vital statistics, diseases, &c., of the Winnebagoes, as I have been enabled to collect during a residence of two years among them.

The present number of these Indians is 1,631, embracing about two-thirds of the tribe, the remainder never having removed to this Territory. It is impossible to ascertain their rate of diminution (if their numbers really do diminish), on account of their migratory character, as they are constantly receiving accessions from their old homes in Wisconsin and Iowa, and as constantly deserting their present location. It was the opinion of General Fletcher (late agent for this tribe), whose observation is entitled to much respect, that within the last five years they have not diminished, but increased in numbers; and such is the opinion to which I am led by the result of my own observation. Although this opinion—contrary to the one usually received—is not at present capable of actual demonstration, it is rendered probable, by the fact of their invariably marrying off their daughters immediately upon the accession of puberty, so that none of the child-bearing period of the lives of their women is spent in maidenhood. This, allowing their fecundity to be the same as that of other women, would make a considerable difference in the amount of births, which is undoubtedly one of the chief reasons why their numbers do not decrease.

Part of the Winnebagoes in this Territory reside at the agency, while the other portion wander along the Mississippi, generally between the Watab and Crow rivers. Those making the agency their home for the last three years and nine months have averaged about 700 in number. The deaths occurring among them since their removal hither—a space of 45 months—I have ascertained to be about 100; of which 70 were children, and 30 adults. The number of deaths was ascertained by counting the graves at the different places of interment near the agency; which probably gives a nearly correct result, as they carefully preserve the marks of their graves. The size of the graves enabled me to determine whether they were children or adults. The 30 adults include all graves of medium size—probably all those of persons over 15 years of age.

It is thus seen that, out of a population of 700 Winnebagoes, there have died 26.66 per annum, or 3.808 per cent. per annum of the whole number. This gives one death in every 26.23 inhabitants. Of the entire mortality, 70 per cent. has been among children, and 30 per cent. among adults.

By comparing these results with the vital statistics of other races, we find that the ratio of



mortality is much higher among these Indians than in the white race, and considerably above that of the negro population of the United States; the rate of mortality in Great Britain being 1 death in 44 inhabitants; in Massachusetts, 1 in 35.30, (Eighth Report to the Legislature of Massachusetts, relating to the Registry of Births, &c. :) in Philadelphia, 1 in 43.12 of the white population, and in the colored, 1 in 31.05, (Emerson on Vital Statistics of Philadelphia.) In Baltimore, the average ratio of mortality is, in the white population, 1 in 46.40; in the free colored, 1 in 34.17; while in the slave population, it amounts to 1 in 26.59, (Joynes: Stat. of Mort. of Balt., Am. Jour. Med. Sci.: October, 1850.)

It will be observed that the rate of mortality among the Winnebagoes, and that of the slave population of Baltimore, as given by Dr. Joynes, (which, I believe, does not materially differ from that of the same population in other American cities,) are very nearly the same.

The average age at death cannot be ascertained with any certainty, as an Indian rarely knows his age; in fact, a mother cannot often tell the ages of her children during their childhood. It will be seen, however, that the proportion of mortality is much greater among children than appears to exist elsewhere in childhood. In Great Britain, 35 in every 100 deaths are under 10 years of age; in Philadelphia, 56 per cent. are under 21 years; and in Baltimore, 58 per cent.; while among these Indians, those dying under 15 years amount to 70 per cent. of the total mortality.

I infer, from my observation among these people, that the *average duration of life* among them is less than among the whites, or even the negro population of the United States. Cases of extreme longevity, however, are not rare among them; one I remember, of a female, who, from her appearance, and from what could be gathered of her history, must have much exceeded the centenary period. I believe that at her death she was not less than 120 years old. Others now living must be verging near to 100 years. This is in accordance with the fact, that that class of a population having the shortest life in the aggregate, furnishes the most cases of extreme longevity in proportion to its numbers.

From the above meagre facts, but more from my general observation, I draw the following conclusions:

1. That the ratio of mortality is greater among these Indians than among the white race, and somewhat higher than in the worst class of the negro population of the United States.

2. That the average age at death is much less than in any other class of the American population.

3. That in the early periods of life the mortality is far greater than in the corresponding periods of any other race.

4. That the proportion of births among these Indians is greater than among a corresponding number of any other people.

5. That this tribe has not diminished in numbers within the last three years; the excess of births being equal to, or greater than, the excess of mortality.

Since my acquaintance (now some seven years) with the population in the northwest, of mixed white and Indian blood, I have made the following observations, which I believe may be set down as facts:

1. That a mixture of the white and Indian races produces an offspring of less physical and moral force, and of less viability than either of the original races.

2. That the offspring of this mixture of the two races is a *hybrid*, and incapable of propagating itself beyond the third or fourth generation.

So long, however, as one of the parents is of pure white or Indian blood, the offspring may be, to a certain degree, healthy, but is not generally vigorous; but when both parents are of mixed blood, the offspring is nearly always scrofulous, feebly developed, and generally dies before the accession of puberty. I have never known an individual, whose parents were *both* of mixed blood, live to old age.

These Indians are subject to the same diseases as are the human race in general, while the

causes of death among them are more frequent than among civilized people. These I propose briefly to notice.

The large percentage of deaths occurring in the early periods of life among these Indians, is abundantly accounted for by the Spartan treatment to which they are subjected in infancy. As soon as an infant is born, it is laid on a board, previously covered with a few folds of blanket; then, with a strip of cloth two or three inches wide, is as amply and securely bandaged from head to foot as an Egyptian mummy, and then strapped to the board, care being always taken to include the arms, which are extended upon the sides of the infant, and leaving nothing out of the bandage but its head. In this straitened position they spend the greater part of the first year of infantile life, remaining at times for weeks without being taken from the board. The effect of this cradle (?) with the heavy woolen bandages, is to interfere with, if not entirely preclude, the healthy functions of the skin. The excrements of the child's body collect, excoriating the skin, and keeping up a constant irritation. The motions of the limbs—the only voluntary exercise an infant can have, and one so necessary to the development of its physical powers—being entirely precluded, it soon becomes weak and enfeebled. But the most pernicious effect of strapping their infants upon these boards is exerted upon the brain. Being always laid upon their backs, with little or nothing between the hard board and the imperfectly ossified head, the continued pressure exerted by the weight of the head almost universally produces a displacement of the occipital bone inwards, causing trismus nascentium, paralysis, &c., and deranging the functions over which the cerebellum presides. They think it a mark of great comeliness to have the head perfectly flattened behind; and the Indian mothers show much anxiety in this respect.

It is wrong to suppose Indian children better capable of surviving less careful treatment in infancy than are those of the whites. The former are generally born with less vigorous constitutions than the latter; and in taking into consideration the numerous causes of disease and death to which these forest children are subjected, the wonder is, how *any* survive—not why so many die.

Among the diseases to which this tribe are especially subject, and one tending more than all others to produce suffering and death, is scrofula, or, more properly, the strumous diathesis, which may be said to pervade the whole tribe. This disease shows itself among them in all its usual forms—enlargement and suppuration of the cervical and other glands, scrofulous diseases of the joints, tubercular meningitis, &c., are its most usual forms among children; while phthisis pulmonalis is frequent in the middle periods of life. I believe that, within the last few years, the deaths resulting from this cause are equal to those from all others.

Pleurisy, pneumonia, and bronchitis, are common, and sometimes fatal. These diseases often occur locally, induced, no doubt, by tubercular deposits. I have thought that these and other inflammatory disorders yield more readily to the use of the lancet and other antiphlogistic remedies, in the Indian constitution than in the white. The reparative powers appear to be more powerful in the former; they certainly are so in the reparation of wounds. An Indian will generally survive a greater bodily mutilation than a white man. This has been attributed to the simplicity of their diet. It is, however, more probably the consequence of a lower degree of organization, and less delicate sensibility of the nervous system.

Intemperance is a fruitful source of disease and suffering among these people. Unable to control themselves in this respect, they indulge in frequent and excessive debauches, often going a week without food, or other sustenance than the stimulus of ardent spirits. At such times they are exposed to the inclemency of the weather, which, of course, is not without its effects: and many of them destroy the vigor of their constitutions in a single debauch, or excite an acute attack of some latent disease, which might otherwise have remained dormant, or entirely passed away.

Epidemic and contagious diseases, especially smallpox and measles, have heretofore been more fatal among these Indians than among whites. The fatality of these diseases I think



altogether owing to the mismanagement of their patients, and not to any constitutional inability to withstand them. During an attack, and especially during a paroxysm of the fever attending these disorders, they expose themselves naked to the open air, and lie during the night in a draught, or, more frequently, plunge into cold water. The reaction after these cold baths usually proves too powerful, and they generally sink. The last occurrence of smallpox among them was in the summer of 1849, when the deaths from it were not more than four or five, and the disease spread but little. They are now all protected by vaccination, and nearly all have had the measles.

The diseases incident to the female organs of generation are extremely common, especially prolapsus uteri and leucorrhœa. The former of these complaints, amounting in many instances to complete procidentia, is so frequent, that a majority of all the women who have borne children are affected with it. Nor is this surprising, when the ill after-treatment to which their parturient females are subjected is taken into consideration. They never maintain the recumbent position an hour after delivery, and generally return within a day or two to the labors of the corn-field, or to the carrying of heavy burdens, and performing all the laborious duties usually assigned to the "squaw." An Indian woman can no more violate, with impunity, the obvious hygienic treatment necessary in the parturient state, than can a white woman.

The process of parturition, among Indian women, does not differ in any material respect from the same process in others; except, perhaps, in being somewhat shorter, and attended with less suffering, which I believe to be owing rather to a low degree of nervous sensibility, than to any material physical difference.

It is generally supposed that a large proportion of this tribe are affected with a syphilitic taint. Such, however, is not the result of my observation among them. I saw two cases in the autumn of 1850—a man and his wife, who were suffering under, and who finally died from, genuine syphilis, combined with scrofula. Many of the superficial glands had enlarged and suppurated, and then, becoming inoculated with the syphilitic virus, were converted into chancre, with indurated sides and bases, discharging from their surfaces a large quantity of watery fluid. I do not know of a single case of secondary or tertiary syphilis in the whole tribe. The variety of chancre generally existing among them is of a very mild character, always yielding to mild escharotics.

Gonorrhœa is common among these Indians, and generally of a virulent character, resisting all ordinary means of treatment. I have never had among them any success with the abortive treatment, recommended by Ricord and Acton. The effect of the injections I have found to be to aggravate the disorder. Buboes are a frequent accompaniment of the disease, and often proceed to suppuration.

The first winter after the removal of the Winnebagoes to this country (that of 1848-'49) was one of unusual severity. The Indians were poorly clad, and miserably fed; their diet being salt pork and flour, and not nearly enough of that. They soon became feeble from want of food; in consequence of which, and the severity of the weather, they lay in their wigwams, taking no exercise. This produced scurvy pretty generally among them; but few, if any, died of the disease. The only thing remarkable about it, I believe, was the rapidity with which it disappeared when its causes were removed; since which, it has not returned. I do not think the scorbutic tendency among them nearly so great as among whites; their powers of digestion and assimilation (when they have anything to digest or assimilate) certainly being better than those of almost any other people. The white population of the place, who were much better fed, clothed, and lodged than the Indians, suffered almost equally with them.

From the gluttonous habits of these Indians, one would suppose *a priori* that diseases of the primæ viæ would be common among them; such, however, is not the case. They enjoy a remarkable exemption from the usual affections of the alimentary canal.

DAVID DAY.

J. FRAZIER HEAD, *Assistant Surgeon U. S. A., Fort Ripley.*

## MEDICAL TOPOGRAPHY AND DISEASES OF FORT RIDGELY.

By Assistant Surgeon Alex. B. Hasson : 1856.

This post was established in the spring of 1853. It is in or near latitude  $44^{\circ} 30'$  north, and longitude  $17^{\circ} 45'$  west of Washington ; but no observations have been made on the spot to determine its position exactly, nor have the distances to neighboring points been accurately ascertained. It is situated in an angle formed by the junction of a small stream, called Rock river, with the Minnesota, and about half a mile from the left bank of the latter, upon the bluffs, by which its bottom is bounded. On the ordinary maps, its site would best be indicated by a point on the Minnesota, midway, or nearly so, between the Redwood and Waraju or Cottonwood rivers. By the usual land route, it is said to be ninety miles from Fort Snelling; though by the river, which is exceedingly crooked, this distance is probably doubled.

The valleys of Rock river and the Minnesota are sunk abruptly beneath the level of the surrounding country. The summits of the steep bluffs that bound them are continuous with the adjoining prairies, and at this place are elevated one hundred feet or more above the level of the rivers.

Rock river, which is a mere creek, has its source five miles back on the prairie, and at the post its valley attains the width of about a quarter of a mile. It is a clear-water stream, running over beds of sand and gravel, and seldom acquires a greater width than four or five yards, or a depth exceeding two feet.

The Minnesota rises in Big Stone lake, about 150 miles above this place. Its valley in the vicinity of the post is from one to three miles in width, and equally divided between woodland and prairie. Through this bottom the river, which is upwards of sixty yards wide, winds a very tortuous course, and its current, moving sluggishly over a muddy bottom, is somewhat yellow and turbid. It is generally confined within its present banks, but in the spring of 1853 it overflowed widely the adjacent bottom. At low water it may be forded in several places near the post. The principal obstructions to navigation below this point are two rapids—one near the Mankato, or Blue Earth river, in the big bend of the Minnesota; and the other, called the Little rapids, farther down the river, and about thirty miles from its mouth. During high water in the spring, medium-sized steamers can make a few trips as far up as the Mankato rapids, and occasionally above them; but they are soon confined to the river below the Little rapids, whence small stern-wheel boats may run for a few months longer, even to points above the post. Competent persons consider that, by a comparatively small expenditure of money at the rapids, and one or two other points along the river, it might be made navigable for boats, of the average Upper Mississippi size, as far up as Patterson's rapids, about forty miles above the post. In ordinary seasons, there is a portage of probably two miles between Big Stone Lake and Lake Travers, which divides the waters of the Minnesota from those that flow into the Red river of the North; and, indeed, in some seasons of very high water, boats have passed from one lake into the other without making any portage at all.

The country surrounding the post is for many miles a gently rolling prairie, occasionally interrupted by a small patch or thin line of timber indicative of a lake or water-course. There is no elevation in the vicinity that can properly be called a hill, and few, if any, in the whole Territory. Running streams are comparatively few, and the extensive plains, being inadequately drained, abound in lakes, ponds, and marshes; but there is no body of water sufficiently large to exercise any modifying influence on the climate. Some of these lakes are very beautiful, having an area of one or more square miles, firm banks fringed with timber, pebbly bottoms, and clear waters abounding with fish. The smaller bodies of water are usually marshy, and devoid of timber. In rainy weather, the water collects in low spots on the prairies, forming extensive sloughs, which render the roads almost impassable. Clear cool springs are frequently met with in the ravines that break through the line of bluffs along the river; and,



in many places on the prairie, good water has been obtained by digging ten or twelve feet through the subsoil of sand and gravel, into a bed of sandy blue clay beneath.

The nearest large body of timber is the "Big Woods," about forty miles distant to the south and east. The post is supplied with wood from the river-bottom in its vicinity, portions of which are very well covered. It consists principally of different species of oak, soft and sugar maple, ash, elm, hickory, butternut, hackberry, bass, cottonwood, and white poplar. No pine is found on the Minnesota, though common on the Mississippi above the falls.

A species of wild plum, the small wild grape, thornapple, and hop, abound in the bottom; and the wild rice in the marshes, wild strawberries, gooseberries, raspberries, currants, and hazel-nuts, may be gathered in season, though generally in but small quantities. Early summer brings a profusion and variety of wild flowers, some of rare and delicate beauty. The wild rose is particularly common, and its fragrance floats in every dell.

Bones of the buffalo are sometimes found bleaching upon the surrounding prairies; but it is now nine years since these animals visited this section of country, and they are rarely seen nearer than a hundred miles to the northwest. The deer are few in this immediate neighborhood, on account of the comparatively small quantity of timber; but in the "Big Woods" and in the "Blue Earth" river country, south and east of us, they are still abundant. The common fox, prairie-wolf, and gopher are found on the prairie, and the coon and red squirrel in the timber. Large black wolves have been seen in the "Big Woods," and are said occasionally to have carried off young pigs. Skunks, minks, and muskrats are numerous, and otter are not uncommon. The beaver, though now rare, is still taken occasionally at points on the river above.

The principal birds seen in this vicinity are the wild goose, teal and mallard duck, common grouse, rough grouse or pheasant, curlew, plover, snipe, woodcock, wild pigeon, and blackbird; this last is an exceedingly numerous species, and very destructive to corn crops.

Bass, pike, pickerel, catfish, pouts, and hard-shell turtles abound in the lakes and rivers.

Two harmless species of snake have been seen at the post. One averages about two feet and a half in length, and has longitudinal green stripes upon its back; it is exceedingly numerous, and has been frequently found in the quarters. The other is about five feet long, and its back is crossed transversely with bands of black spots. No venomous reptiles have been seen here, but rattle-snakes are said to be abundant in the country bordering on the Missouri.

From June until the last of September the mosquitoes are exceedingly numerous and annoying, and last season the same was true of the *fleas* also.

The subsoil is a yellow sand, of various degrees of fineness. Near its upper surface lies a seam of gravel and small boulders, and beneath it a bed of blue clay, of which bricks of ordinary quality have been made. The face of the bluffs bounding the river-bottom is thickly strewn with granite boulders, some of them of a large size; but a few rods back upon the prairie, stones are rarely found on the surface. The nearest outcrop of solid rock is in Rock-river bottom, near the base of a steep bluff that walls in the stream, and at a depth of about seventy-five feet below the level of the adjacent prairie. It is a soft red sandstone, and probably rests directly on the granite, which shows itself in many places along the river.

Our commissary storehouse and company quarters are built of granite, obtained about two miles up the river, where the bluffs on the opposite side come down to the water's edge. In various places along the bottom, on this side of the river, knobs of granite rise up like barren islands amid the surrounding green and level prairie. Pieces of coal have been picked up at various places below, but nothing like a bed of that mineral has been discovered. Limestone has not yet been found nearer the post than the mouth of the Waraju or Cottonwood river, though it is abundant below that point. The means at hand were too rude for making an exact or extended analysis of the superficial soil, and none was attempted. It is rich in organic matter, black, loose, and sandy; and being, therefore, warm and "lively," is well adapted to the short growing season of the country. Its depth on the prairie is about one foot, but in

portions of the bottom it is upwards of two. Its specific gravity was found to be 2.061. Three hundred grains, thoroughly dried over a spirit-lamp, and then exposed to the air for twenty-four hours, gained four grains and a half. By agitating a portion with warm water, and decanting, it separated into three parts of fine sand to one of finely-divided aluminous vegetable and other matters. Its loss of weight in burning was more than one-tenth of the whole. One hundred grains contain about four grains of carbonate of lime.

An abundant crop of the ordinary roots, and of cabbages, cauliflowers, peas, beans, squashes, pumpkins, and cucumbers, may generally be relied on. The Lima beans, musk-melons, cantaloupes, water-melons, and tomatoes, planted in the post gardens last year, were overtaken by the frost, and but few attained perfection. This was owing to the late cold weather and drought in the spring, by which their progress was retarded. The preceding year was not so unfavorable, and the cultivation of these vegetables was more successful. Good crops of corn and oats have been made in the surrounding country, and experimental sowings of spring and winter wheat, rye, and buckwheat, have turned out favorably. No advantage is derived from planting in the open ground earlier than the middle of May. This section of country is yet too new to afford any satisfactory data upon the cultivation of fruit-trees.

The Minnesota-river country was purchased by the general government from bands of the Sioux or Dacota Indians in the year 1851. These bands are still permitted to occupy a tract of the country above the fort, and only the lands below have as yet been thrown open to white settlement. Already most of the desirable claims along the river—that is, those combining the advantages of timber, prairie, and water—are occupied by squatters: and, although none of this land has yet been sold by government, some tracts for farming purposes have already changed hands at ten dollars and upwards per acre, on the security of *quit-claim* deeds. Several town sites have been laid out along the river, and some of these are rapidly becoming places of considerable business. There are many Germans, Danes, and Norwegians among the settlers: but the population consists principally of Americans from the northern and northwestern States, in accordance with the usual law of emigration, by which our new States are settled by immigrants from the older ones lying in the same parallels of latitude. Thus we trace the pedigree of Texas back through the States bordering on the Gulf, to Georgia; that of Arkansas, to Tennessee and North Carolina; of Missouri, to Kentucky and Virginia; and of the west and northwest, to the middle and New England States. The Indians living in this vicinity are bands of Dacotas, or Sioux, a numerous nation that roams the country to the west and northwest as far as the Rocky Mountains. Prior to 1837 these bands occupied the country extending from a point on the Mississippi below Lake Pepin, up the Minnesota to Big Stone lake; but, having sold it by treaties to the general government, they are now restricted to a reserved portion, whose lower boundary is the post. Upon this tract the Indian Department has established an agency, and, in compliance with the treaty, have broken up land at several points, and maintain farmers, blacksmiths, and two physicians, for the benefit of the Indians.

The number of individuals of all the bands who are paid annuities by the government is between six and seven thousand.

Those belonging to the "lower bands," besides receiving annuities in common with the rest, by virtue of the treaty of 1851, are also paid an additional amount in accordance with the treaty of 1837, by which they disposed of lands lying on the Mississippi river. The annual amount paid to these, exclusive of the specific sums expended by the agent for agricultural and other purposes, is about twenty dollars per head in cash, and five dollars per head in provisions: besides some guns, ammunition, and blankets, which are distributed among the principal men and heads of families. The members of the other bands are paid about one-half these amounts. As the sum annually distributed is fixed by treaty, of course the amount paid each individual varies yearly with the census.

Besides these annuities, they depend for subsistence on hunting, fishing, the cultivation of a little corn, and on the natural products of the country—the wild rice, plums, maple sugar,



&c., in their season. The bands which have long resided about the head-waters of the Minnesota hunt the buffalo; but those which have been moved up from below, seldom venture so far out upon the plains, and have been in the habit of frequenting the "Big Woods" and the timber country south and east of us, where the deer are still abundant. This, however, is in violation of their treaties, and the rapid settlement of the country must soon deprive them of those hunting-grounds. Almost every animal the Indian meets contributes to his subsistence, and the dogs that throng his wigwam constitute a favorite material of his choicest feasts. The musk-rat, which is very abundant in this country, supplies a large proportion of his winter food. These are taken by cautiously approaching their houses on the margins of the ponds, and thrusting an iron-pointed stick through the earthen walls: thus impaling the animals within, before they can escape through their subterranean passages. Persons who have partaken of this dish, speak of it as being by no means ill-flavored or unpalatable.

These Indians obtain, also, many supplies from the white traders, who furnish them with goods in exchange for their peltries and annuities. They raise some corn every season on the land prepared for them by the Indian Department, the only part of the work performed by themselves being that of planting and gathering the crops: and this, like all else that can be properly called work, is done entirely by the squaws, their lords and masters by no means subscribing to the doctrine of the "dignity of labor."

Convenient to their cornfields are bark houses, in which they live during farming operations: but after the crop is gathered and buried in the earth, they roam the country in search of game, living in their moveable lodges or *teepees*. These are made of cotton cloth or buffalo skins stretched upon poles.

Their costume consists of a cotton or woolen shirt: leggings for the men, and petticoats for the women, of the same materials: moccasins: and a blanket, which envelops the form, and hangs from the head or shoulders.

As in all primitive communities, where the means of subsistence are precarious, and the danger from enemies constant, the men's share of duty consists only in hunting and war, and much of their time is spent in idleness. Labor devolves entirely upon their squaws, and for this reason the married women are generally superior to the men in strength, and interior in grace of motion and symmetry of form. Among the young unmarried females, however, individuals may be met, who, with the advantages of cleanliness and becoming dress, would possess very fair pretensions to beauty. Both sexes are remarkable for the small size of their hands and feet, but the latter are flat, and the instep low. The men are rather above the average height of white men, and are generally possessed of great endurance and bodily activity. A young warrior was confined in an upper room of the barracks, under constant charge of a sentinel. For some days he feigned to be extremely ill: but suddenly at midnight he sprang through the upper sash of a window, alighted on hard ground about twenty-five feet below, and immediately escaped into the surrounding darkness. About three months afterwards, I saw him at the house of a half-breed near the post, where he had just returned from a foray against the Pawnees: and, from curiosity, I made an examination of his person, which confirmed his own statement that he had received no injury.

It is rare for a man to have more than three wives, and a widow with children is a prize much sought after: for as every individual is entitled to an annuity, these Indians measure their wealth by the size of their families. When a man desires any particular woman for wife, he usually proceeds for several nights to the vicinity of her wigwam, and entertains her with a monotonous serenade on a rude pipe. After this preliminary courtship, he seeks the consent of her parents by the offering of presents, and, if these be accepted, receives his wife in return.

The various bands of this numerous nation are bound together by no political organization, or other tie, save that of community of language and race. Each band seems to be an independent body, having its own chief and orators: but the organization is exceedingly loose, and it is not uncommon for individuals to leave one band for another. Their chiefship is nominally

hereditary; but this rule must frequently be broken, where power and influence depend so much upon purely personal qualifications. In fact, the acknowledged chief often plays but a secondary part in his band to some daring warrior, eloquent orator, or sagacious "medicine-man." The Dakota's law is that of retaliation, and depends for its execution solely upon the personal abilities of the party injured and the devotion of his friends. Quarrels, which may thus spread, and continue indefinitely, are generally, however, brought to a conclusion by peace-offerings from the weaker to the stronger party, and often by the mutual interchange of presents. Among those bands which receive annuities, the Indian agent is enabled to adjust many disputes, especially concerning property, as the funds accruing to each individual must pass through his hands.

The Sioux have been engaged in an hereditary warfare with the Chippeways from time immemorial, and are taught from their earliest infancy to regard them as mortal foes. They are under the constant necessity of guarding against surprise by the war parties of their enemies that prowl through their country, and may at any moment be lurking in ambush, watching an opportunity to rush upon some party weaker than themselves, or an unprotected camp of women and children, and reap a rich reward of scalps—the dearly-prized tokens of the warrior's prowess. In the summer of 1854, within a few hundred yards of this post, a war party of eight Chippeways rushed from ambush upon three Sioux, one of whom was killed, and the others escaped to the post. The Sioux warriors are not slow in retaliation; and a short time after the above occurrence, a party of them fell in with a camp of Chippeways, mostly women and children, and murdered about thirty of their number.

That "the essence of war is violence" is truly the Indian's maxim, and the chivalrous sentiments of civilized warfare are to him but foolishness. His principle is to exterminate the whole race of his enemies, or, as his sign forcibly expresses it, to *wipe them out*; and neither old nor young, women nor children, are exempt from his fury. Sometimes a woman or child is taken prisoner, and then their lives are at the entire disposal of their captors. About a year ago, a Chippeway girl was taken prisoner by a Sioux warrior; but not proving as completely submissive as her master thought desirable, he subjected her to much harsh treatment. Her sufferings excited the sympathy of a half-breed trader, who carried her off clandestinely, and brought her to this post, whence she was sent to her own country. Her Sioux master has been annoyed ever since by the upbraidings of his band, and his own regrets, at his folly in sparing a Chippeway to become the mother of warriors that will battle against his race.

In the Indian's creed, cunning is the better part of valor; and he seeks his foe upon the same principle that he hunts his game. To creep stealthily upon his enemies when sleeping, to attack them always at their disadvantage, to evade their superior war parties, and suddenly burst upon an unprotected camp of their women and children, constitute with him the highest claims to a warrior's honors. Hostile meetings of war parties, open and premeditated on both sides, are therefore exceedingly rare; and their warfare is but a series of surprises and butcheries. Upon the same principle, successful horse-stealing ranks high in the scale of military honor; and it is not uncommon for parties of three or four, and sometimes for a single individual, to penetrate on foot into the enemy's country, lurk about his camp until an opportunity offers, which is usually at night, and, having stealthily crawled to the nearest horses, suddenly to mount and gallop away in the direction of their distant home. Almost every one who has campaigned upon the western plains can bear testimony to their expertness in this honorable accomplishment. Judged by the standard of civilized life, which exalts the open combat above the secret blow, the Indian might be pronounced deficient in true personal courage; but this difference is probably one of education alone, and his stoical fortitude under physical suffering is proverbial.

Their religious creed seems to consist principally in the notion that there are spirits pervading every object in the universe, determining the fortunes of men, and the operations of nature; and that these spiritual essences bear to each other, and to the Great Spirit who presides



over them all, some close and mysterious relationship. They recognize but faintly the idea of future punishment; and their notions of the next world are, for the most part, but exaggerated conceptions of the Indian's pleasure in this. Their word, inadequately rendered "medicine," is vaguely applied to every incomprehensible, mysterious, and therefore, in their belief, spiritual influence. Dr. Daniels, the physician who resides among them, tells me they have an almost idolatrous reverence for opium and chloroform, the "great medicines" that bring repose and insensibility to pain. The Doctor and myself having had occasion to perform several operations, in which we used chloroform, the fame of this medicine soon spread among the neighboring Indians; and one of their young men, who had been disappointed in a love-suit, came to Dr. D. and earnestly besought him for a few drops of the mysterious liquid, for which he would willingly have exchanged his horse. He had no desire to administer it, but simply to have it in his possession, that, by conjurations, he might secure the favor of the powerful spirit to which he attributed its mysterious influence.

As in all primitive communities, the functions of priest and physician are based alike upon the supernatural, and constitute a single profession, of which the sages, or "medicine-men," are the exponents. The candidates for the honors of this fraternity are initiated within the medicine lodge, from which *laymen* are excluded. Women are sometimes admitted to membership. The functions of these "medicine" men or women are to appease angry spirits, to invoke their favor upon enterprises of war or hunting, to tell the time when these may be favorably undertaken, to exorcise diseases or evil spirits, and to perform various other mysterious offices. Their various ceremonies consist principally in feasting, singing, dancing, haranguing, and grotesque gesticulation, accompanied with the beating of skins stretched upon frames, and the rattling of gourds filled with pebbles. When a man of note dies, it is customary for his friends, as soon as they have the means, to give a grand "medicine" feast to his shade; and his horses, guns, blankets, and other effects, are held sacred until that occasion, when they are distributed among his friends and relatives. The custom is seldom observed among these bands, of burying the dead person's effects with the body, or of leaving them upon the grave; long proximity to the whites having probably changed their practice in this respect. Besides their medicine feasts and dances, there are many others common to the whole band, as the "thunder dance," "buffalo dance," "scalp dance," and "dance and feast of the virgins." The scalp dance is performed around an enemy's scalp stretched upon a frame. It may be danced an indefinite number of times within three months after the capture of the scalp, which must be buried at the expiration of that period. At the feast and dance of the virgins, only the chaste of both sexes are allowed to participate; and should any intrude, who can be proved unworthy, they may be dragged in disgrace from the assembly. The rude drum, rattle, and primitive pipe, used by the lovers in their serenades, are their only instruments of music. Their dancing is little more than a succession of uniform shuffles, and their singing of monotonous jerking sounds.

In cases of sickness, these Indians sometimes resort to the external and internal use of various herbs, scarifications of the surface, and the vapor-bath. The latter is administered by setting up a small frame of twigs, covered in closely with blankets, within which the patient seats himself, and pours water upon heated stones. Their principal reliance, however, in severe cases, is placed upon the conjurations of the "medicine-men." These proceed to the patient's lodge, usually at night, where they chant, beat their rude drums, rattle their gourds, and perform other magical rites. At a given signal, they discharge their guns through the entrance of the lodge at the disease, or evil spirit, as it passes out from the body of the patient. But, usually, it returns again and again; and night after night it must be "drummed out," until it is entirely banished, or, proving too strong for its opponents, it kills its victim.

Very old persons are seldom seen among them; and there is no doubt that a very large number of children fall victims to the "hardening processes" to which they are unavoidably subjected, who, in civilized life, would have been reared to useful maturity.

The diseases attendant upon privation and exposure are the most common among them, as phthisis, scrofulous affections, rheumatism, dysentery, diseases of the ear and of the eye. These last are remarkably frequent among Indians generally, owing to their exposure to the glare of sun and snow, the cold winds of the prairies, and the smoky atmosphere of their wigwams. Their systems seem to possess comparatively but little irritability, or tendency to high grades of inflammation, and wounds usually heal with remarkable facility. The process of parturition rarely proves difficult, or interrupts the usual avocations of the woman more than a few hours.

From their long intercourse with the whites, the bands inhabiting this vicinity have become entirely dependent on them for almost every article of daily and indispensable use, as clothing, cotton for their teepees, hunting and fishing apparatus, knives and hatchets, cooking utensils, even the paint that adorns their faces, and the instruments that fashion their pipes. Yet they can scarcely be said to have made any progress in civilization, or to evince any desire of relinquishing their vagrant habits and precarious means of subsistence for fixed habitations and systematic labor. When a party of them, on a late occasion, was laying before the agent their numerous wants, he told them that if they would work upon the farm like the white men whom he had hired, they would never want for food, and would severally receive as much money every month as their annuities amounted to. "The Great Spirit," said an Indian warrior, in reply, "made the squaw, the negro, and the white man for work; but us, he made for warriors."

It is rare to find a full-blooded Sioux who understands more than a few words of English, or will make use even of those; and their interpreters are always half-breeds or white men.

If civilization has made so little progress, Christianity may be said to have made none. There have been one or more missionary establishments among these Indians for the last twenty years. At the mission on the Yellow Medicine river, there is preaching every Sunday in the English and Dakota languages, and a day-school, in which Indians may be taught to read the Bible in their native tongue. But besides the white and half-breed employees of the Indian Department, and their families, there are few or no attendants, either at school or meeting. The Indians themselves seem perfectly indifferent, and practically ignore the establishment.

**METEOROLOGY.**—The earliest frosts recorded were on September 20th, 1853, October 4th, 1854, and September 27th, 1855; the latest on May 11th, 1854, and May 8th, 1855. The Minnesota river, at the post, was closed with ice November 20th, 1854, and opened on the 6th of the ensuing April. The young grass was seen in the bottom on the 11th, and a prairie flower on the 15th of April, 1855. Heavy thunder-storms are not uncommon in the summer, and several severe hail-storms are recorded. Heavy dews and fogs at night, especially over the river-valley, are frequent in the months of August and September. The autumn weather is the most pleasant of the year, and much of it has that soft mellow haziness characteristic of Indian summer. The winter weather is often very rigorous; this severity depending on the combined influence of low temperature and the strong northwest winds which prevail at this season, and sweep for hundreds of miles over an almost unbroken prairie. These winds render travelling over the prairies in the winter season not only difficult, but at times dangerous, by forming extensive snow-drifts, rapidly obliterating the roads, and fearfully augmenting the depressing influence of cold upon the system. On one occasion, during the present winter, when the mercury was six degrees below zero, the atmosphere was so thick with drifting clouds of snow, borne onward by a furious northwest wind, that at three o'clock in the afternoon a house could not be seen at the distance of forty yards; and it was almost impossible to keep one's eyes open, even for a single moment, in the face of the storm. On such occasions, the traveller whose course is against the wind renounces all thoughts of advancing, and, if caught by the storm upon the prairie, quickly retraces his steps to the nearest shelter. It is from exposure to these winds, which so rapidly conduct the heat from the system, that severe frost-bites usually occur; while at other times, though the mercury indicates a much greater degree of cold, if the atmosphere be calm, these accidents are comparatively rare. The great variation between the sum-



mer and winter temperature of this post gives to its climate that excessive character peculiar to interior localities remote from the modifying influence of large bodies of water. Fort Howard, on Green bay, is but a few minutes, and Astoria, on the Pacific, is about a degree and a half north of Fort Ridgely; and subjoined is a comparative view of some of the climate statistics of these three posts. The statistics also of some Atlantic post, situated in nearly the same latitude, would be an interesting addition, but the requisite data are not at hand. The amount of rain given for Astoria, is for eleven months only; the data from which it was obtained being incomplete. The means for Fort Ridgely are calculated from the observations for two years, ending December 31, 1855.

Stations.	Annual mean.	Spring mean.	Summer mean.	Autumn mean.	Winter mean.	Maximum temperature.	Minimum temperature.	Rain and melted snow in inches.
Fort Ridgely.....	45.54	48.75	70.89	48.46	14 03	98	—24	31 55
Fort Howard .....	44.33	43.66	67.71	45 45	20.53	99	—30	35.74
Astoria .....	53.26	51 80	61 63	55.48	44.15	94	22	60.58

In the accompanying tabular statement,\* eighty-two cases of *intermittent* and *remittent* are reported; yet even this number, though comparatively small, gives an exaggerated idea of the prevalence of miasmatic disease at the post. In many instances, the same individual has been reported sick of intermittent on two, and even three and four separate occasions; so that the whole number of *persons* who have been ill of this disease will not amount to one-half the number of reported *cases*. And of these individuals, more than one-half suffered from the disease previously to coming here, and after any unusual exposure were liable to have a slight attack, which was always registered as a distinct case of intermittent. But, after making this allowance, even the small number remaining will hardly be a fair criterion of the amount of miasmatic disease which originated at the post, and for the following reasons: During a great portion of the time, the hospital accommodations were so inadequate, that many men on the sick-report were allowed to remain in quarters with their companies; and, in these cases, the diagnosis had frequently to depend, in a great measure, on the patient's own statements, which, among soldiers, is, for obvious reasons, not always reliable; and, as a great majority of the cases, both of remittent and intermittent, were returned to duty within four days after reporting sick, it is probable that some of them were attributable rather to some transient source of irritation than to *miasmatic* influence.

Upon the whole, then, I may say that I have never seen a single case of grave or protracted miasmatic fever at the post, almost every one being of that grade of mildness that "scarcely confines the patient, or requires the intervention of medicine." (Wood's Practice, art. *Remittent*.)

Upon the foregoing report, no case of idiopathic continued fever is recorded; but, from the commencement of the present year up to this date, (February, 1856,) as many as twelve have occurred. Though some of these cases continued for three weeks before convalescence fairly commenced, yet none of them were at any time regarded as particularly grave; the patients were never delirious, and were always able to get out of bed, unassisted, to attend to the calls of nature. The present winter has been colder than any I have known at the post, and to economize fuel has been with us an imperative necessity; hence, the men have been unusually crowded, and ventilation and personal cleanliness have doubtless received less attention than in more favorable weather. To these causes, and the depressing influence of the severe cold, these fever cases seem to be attributable.

\* The table here referred to by Dr. Hasson is omitted, for the reason that its form cannot conveniently be adapted to the pages of this volume; and, also, because it is believed that the analysis in the text is sufficiently minute for practical purposes.—C.

One case of *sporadic cholera* was reported on the 30th of last August. The patient had eaten a large quantity of wild plums just before going to bed, and was taken ill the same night. When I saw him, his pulse was extremely feeble, his features pinched, skin cold, nails blue, and voice faint; he had violent cramps, vomiting, copious *rice-water* discharges, and, in fact, the usual symptoms of collapse in epidemic cholera. The remedies used were opium, camphor, brandy, and mustard, as usual; but the principal reliance was placed on calomel, of which I administered about sixty grains within the first half-hour after seeing him. No salivation or other unpleasant symptoms resulted, and in five days the soldier was returned to duty. This is the only case of cholera which I have seen at the post. Cases of *diarrhœa* appear to have been most frequent during the quarters ending December, 1854, and September, 1855. Many of these are attributable to the wild plums, which are eaten freely in the months of September and October. Yet twenty-one cases are also reported for the quarter ending March, 1855; but, as the duty during this quarter was sometimes very severe, and, as before stated, the men who reported sick could not always be subjected to observation in hospital, I have no doubt that during that period an unusual number of feigned cases were reported. And if the soldier cannot be placed under the strict surveillance of the medical officer, there is no disease he will more readily feign than *diarrhœa*.

The case of *chronic hepatitis* reported, was that of a soldier who had been previously sick of miasmatic fever in Florida and Mexico. The generally light character of the diseases of the "*respiratory system*" can be seen by a glance at the table, and the cases of *pneumonia* and *pleuritis*, with one or two exceptions, were comparatively mild. The two deaths from *phthisis* were of soldiers who came here in October, and died in the ensuing March; and I have little doubt that tubercles existed before their arrival at the post. In the other reported case, no great amount of disease was developed; urgent symptoms were palliated, and the patient returned to duty.

The death from *epilepsy* was in consequence of apoplectic congestion occurring during a paroxysm. The patient was very intemperate, and had been subject to the disease for many years.

In one case of *frost-bite*, it was necessary to amputate the foot; the rest terminated without any mutilation.

But few cases of severe *rheumatic disease* were seen, and some reported *acute* might more properly have been classified as *sub-acute* rheumatism. Rheumatic affections are favorites with malingerers, and it is not improbable that, in the course of two years and a half, some feigned cases have been reported.

"*Abscess and ulcers*" constitute a large item in the report, for *furunculus* is a very common disease among soldiers, particularly recruits. *Onychia* and *paronychia* were almost exclusively confined to the cooks.

One hundred and sixty-two cases of "*wounds and injuries*" are reported, most of which occurred to men engaged in building operations, which have been going on since the establishment of the post.

The cases of "*ophthalmia*" were generally mild, and readily subdued by the ordinary treatment.

The cases registered as "*morbi varii*," presented no characteristic sufficient to warrant a definite diagnosis. They were borne on the sick-report but a day or two, and in many of them, doubtless, there was nothing at all the matter.

The operations performed during the period specified were: one amputation of the thigh, in a case of gun-shot wound of the knee-joint; urethrotomy once, in a case of lacerated urethra from external injury; and Chopart's operation once, in a case of frost-bite. These were performed on soldiers; but I had occasion also to amputate both the legs of a female patient upwards of sixty years of age, whose feet had been frozen during an exposure of three days and nights upon the prairie in a snow-storm. All the operations resulted favorably.



*Chloroform* was administered in every case, excepting that of urethrotomy. On this occasion there was none on hand, and the local application of ice and salt, which was employed as a substitute, proved but a poor one. Chloroform was also used with admirable effect in a case of luxation of the humerus downwards into the axilla. The patient was brought into the hospital somewhat drunk and in great agony, and, being a powerful man, was almost unmanageable. Without the induction of anæsthesia, all attempts at immediate reduction—so very important in these cases—would have been attended with great risk of really aggravating the original injury, and proving worse than useless, through the patient's own violence. A towel strongly charged with chloroform, partly through persuasion and partly by force, was applied to his mouth and nostrils, and almost in a moment he lay senseless and relaxed; the luxation was at once and easily reduced, and he woke to ease and comfort.

It appears from the table that every man was reported sick about once in every  $5\frac{1}{2}$  months; and this fact, as well as the general light character of the cases, argues for the post a high degree of salubrity.

It will also be seen how essential it is, in instituting comparisons of the relative healthiness of military and civil communities, based upon medical statistics, that the character of the diseases, as well as their numerical amount, be considered. A large proportion of cases borne upon the army "returns of sick and wounded," had they occurred in civil life, would never have been presented to the notice of a physician. The soldier receives medical attention without cost, and is, in general, not backward in availing himself of the privilege; and if his duties are interrupted by the slightest ailment for a single day, the case is recorded. And from the peculiar nature of his duties, they are liable to be interrupted by a thousand accidents, which scarcely interfere with the ordinary occupations of civil life. Thus, he may be disqualified for military duty by an otherwise trifling affection of a finger or toe; the one unfitting him for drill at the "manual of arms," or the other for marching with the requisite precision.

#### FORT KEARNY.

In the absence of any special topographical report\* respecting this station, the following brief statement has been collated from Captain Howard Stansbury's report of his "Exploration of the Valley of the Great Salt Lake," and from other sources:

Fort Kearny is opposite Grand Island, on the level plain which extends south from the Platte or Nebraska river to the distance of three miles, where it terminates in bluffs of moderate elevation. The immediate site of the fort is about three-fourths of a mile from the right bank of the river. In 1849, it consisted of several adobe buildings for offices and stables, and two wooden structures for quarters. The character of the Platte valley here is that of a flat prairie, composed of sand and clay, in which, when the latter predominates, water is found standing in small pools; but when the sand is most abundant, the water passes through it like a sieve, and is quite drained away. The water is generally clear and cool, but much of the sickness among emigrants has been attributed to its use. This water is evidently derived from infiltration from the higher levels and bluffs, which in this hidden manner discharge their surplus moisture into the river. Wood for fuel is difficult to be had, and is mostly procured from the island.

Geographical position: latitude  $40^{\circ} 38'$ , longitude  $98^{\circ} 58'$ ; distant from Fort Leavenworth 311 miles, by the usually travelled route, and about midway between the Mississippi river and the Rocky Mountains.

\* In repeated instances, the absence of the medico-topographical reports required by the regulations for the Medical Department has been a source of no little embarrassment in the compilation of this work. It is due to the medical officers, however, to state, that these omissions are not owing to forgetfulness, or intentional avoidance of this duty, but arise from an impression that the required observations on topography, &c., &c., have been made by some of their predecessors at the several stations. In most cases, this error might be avoided by special examination of the retained records of the several hospitals.—C.

## FORT LARAMIE.

Respecting this military station, Captain Stansbury, in the report above cited, gives the following particulars:

"Fort Laramie, formerly known as Fort John, was one of the posts established by the American Fur Company for the protection of their trade. Its walls are built in the usual style of such structures, of adobe or unburnt brick. The soil in the vicinity appears to be sterile, owing, no doubt, to the extreme dryness of the air and almost total absence of dews. The great quantity of coarse conglomerate, too, which, by its disintegration, leaves the surface covered with gravel, must operate as a great impediment to cultivation. The rocks, however, contain the elements of fertility, being composed of limestone, clay, and sand; and, with the aid of irrigation, the bottom lands of Laramie creek might be made to produce most abundant crops. Hay is cut, about eight miles up the stream, in quantity sufficient for the wants of the garrison."

According to Assistant Surgeon G. K. Wood, the fort is elevated about twenty feet above the plain immediately surrounding it, which is enclosed by hills at a distance of about a mile, except on the north and southwest. The latter direction is occupied by the valley of the Laramie river, through which the wind sweeps almost constantly with great violence; in summer, raising clouds of dust so dense as to obscure vision for hours; and in winter, the snow, perfectly dry, is similarly raised; and lives are frequently lost on the plains about the post, from the inability of the traveller to discover the direction to pursue.

As regards the geographical position of Fort Laramie, it is in latitude  $42^{\circ} 12' 38''$ , longitude  $104^{\circ} 31' 26''$ , as determined by Captain Stansbury. Its altitude, 4,519 feet above the level of the sea.

The mean annual temperature is  $50^{\circ}.6$ , having an extreme range of  $123^{\circ}$ ; rising in summer to  $102^{\circ}$ , and falling in winter to  $-21^{\circ}$ . The mean annual precipitation is 19.98 inches.

## DISEASES.

The following table, compiled from abstract No. 6 of this division, represents the aggregate amount of sickness and mortality among the troops serving in the region west of the Great Lakes:

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	7,308	3,158	22	432	3
Second quarter.....	6,970	3,839	21	550	3
Third quarter.....	7,306	5,430	25	743	3.4
Fourth quarter.....	7,335	4,320	13	602	1.7
Annual ratio.....	7,230	16,747	81	2,316	11.2
Exclusive of cholera.....		16,707	77	2,310	10.6

An examination of this table shows that the proportion of cases treated annually, to the mean strength of the forces, is 2.31 to 1; that the corresponding ratio of deaths is 1 in 89, or 1.1 per cent.; and that the proportion of deaths to the number of cases treated is 1 in 207, or 0.4 of one per cent. Exclusive of cholera, the deaths were 1 in 94, or about one per cent.



## FEVERS.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	7,308		6,970		7,306		7,335		7,230			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris continua communis.....	34	0	22	0	61	0	34	0	151	0	0 in 151	20
Febris intermittens quotidiana.....	111	0	201	0	556	2	309	1	1177	3	1 in 392	162
Febris intermittens tertiana.....	124	0	347	0	411	0	411	1	1293	1	1 in 1293	178
Febris intermittens quartana .....	7	0	7	0	6	0	8	0	28	0	0 in 28	3
Febris remittens -----	14	0	39	0	178	2	36	0	267	2	1 in 133	37
Febris typhus.....	0	0	6	1	3	0	1	0	10	1	1 in 10	1
Febris typhus icterodes.....	0	0	0	0	0	0	0	0	0	0	0 in 0	0
Total -----	290	0	622	1	1215	4	799	2	2926	7	1 in 418	407

An examination of the original reports shows that the military stations in this region are, with two exceptions, quite exempt from fevers of an intermittent type. The exceptions are Forts Crawford and Des Moines. Bearing in mind that these posts ceased to be occupied by regular troops in 1846, the fact now stated is quite apparent in the consolidated abstracts. Thus, of 556 cases of quotidian fever, in the abstract for the third quarter, 455 occurred in the eight years from 1839 to 1846, inclusive, and only 101 during the subsequent eight years. Of tertian fevers, 335 occurred during the first eight years, and 76 in a corresponding period after the abandonment of those two posts. A similar ratio will be found to obtain in the other quarters. Most of the intermittent fevers at other posts in this region are stated by the medical officers to occur in recruits from various points on the lower Mississippi.

Surgeon Alfred W. Elwees, in his report of sick at Fort Crawford for the third quarter of 1840, during which intermittent fever and dysentery had been very rife, holds the following language:

"The present report exhibits an unusual degree of sickness. I had anticipated this early in the season. The Mississippi has been unusually low during the whole summer, and the season dry. The prevailing winds during the month of July, south; in August, east and southwest; and in September, south and southwest. East and southeast winds bring the fogs from the Wisconsin, and the south and southwest winds those from the extended marsh lying in front of the village of Prairie du Chien and the fort. The course of the winds, the dryness of the summer, and the unusually low stage of water in the Mississippi, abundantly explain the existence of so much intermittent fever; and when a remarkably damp atmosphere, almost daily fogs, and frequently cool mornings, are added to the other prolific causes of bilious fever, the epidemic dysentery which has prevailed here may be readily accounted for."

Surgeon George F. Turner makes the following remarks in transmitting the report of sick at Fort Snelling, for the quarter ending September 30, 1840:

"A large proportion of the cases of intermittent and remittent fever reported had their origin at Fort Crawford, and occurred here in men belonging to a company of infantry which returned to this post. There was nothing peculiar in the treatment of these cases, except, perhaps, the use of the tartrate of antimony in combination with the sulphate of quinine, which was always prescribed when there was a reasonable doubt as to the condition of the system to bear the stimulating effect of quinine; and especially in the remittent cases, in which the diaphoretic effect of the tartrate of antimony was almost always produced when combined with the quinine,

while the latter had its specific effect in preventing the recurrence of the periodic paroxysm. The following is the usual prescription: Sulph: quiniæ, grs. x; tart: ant: et potass, gr. 1.; ft. pil: no. viij; one every hour during apyrexia. I consider the combination invaluable in the treatment of intermittents and remittents, but particularly the latter; and my conclusion is founded on my experience in the management of these diseases in Florida."

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	7,308		6,970		7,306		7,335		7,230			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica.....	0	0	7	1	33	3	0	0	40	4	1 in 10	
Diarrhœa.....	116	3	369	0	974	3	429	1	1888	7	1 in 269	261
Dysentery acute.....	18	0	60	1	247	0	51	0	376	1	1 in 376	52
Dysentery chronic.....	4	4	1	0	10	1	12	1	27	6	2 in 9	4
Enteritis.....	0	0	1	0	5	0	1	1	7	1	1 in 7	1
Hepatitis acute.....	1	0	8	0	7	0	4	0	20	0	0 in 20	2.7
Hepatitis chronic.....	6	0	5	1	3	0	5	0	19	1	1 in 19	2.6
Obstipatio.....	67	0	102	0	162	0	93	0	424	0	0 in 424	58
All other diseases of this system .....	146	0	178	0	224	0	165	1	713	1	1 in 713	98
Total .....	358	7	731	3	1665	7	760	4	3514	21	1 in 167	486
Exclusive of cholera.....									3474	17	1 in 204	480

The only military stations in this region visited by cholera were Forts Kearny and Laramie. It is well known that in the summer of 1849 the emigrants crossing the western plains suffered with this disease. The garrisons at the abovementioned posts, on the line of emigration, escaped; but two cases being reported—one at each post. Assistant Surgeon William Hammond, jr., at Fort Kearny, states that the case of cholera, included in his report for the quarter ending June 30th, 1849, was brought to that post. No case originated there. The case included in the report for Fort Laramie, really occurred on the march to that post from Fort Leavenworth.

Taking the quarterly reports from Fort Kearny in due order, it is found that in June, 1850, Assistant Surgeon Wm. Hammond, jr., reports the health of the troops good, but adds that "the California emigrants, between Forts Leavenworth and Laramie, have suffered a good deal from a disease called by them cholera, and which, in its sometimes rapid and fatal course, very much resembles that malady; but which was nothing more than an acute form of diarrhœa, brought on by excessive imprudence in diet, and exposure to many hardships on the plains, to which they were entirely unaccustomed at home. The universal use of quack nostrums, called cholera mixtures, composed principally of brandy and Cayenne pepper, has tended to aggravate the disease when formed. I have seen a great many cases among the emigrants, all of which, when fairly treated with calomel, opium, and astringents, have readily yielded. I do not think there has been any true Asiatic cholera upon the plains this summer."

The quarterly report of this officer for June, 1851, contains the following remarks: "The case of cholera reported above occurred in a recruit, just arrived from Fort Leavenworth, who had been suffering with diarrhœa several days before reaching this post. When brought to the



hospital, at 11 o'clock A. M., June 28, he had all the symptoms of Asiatic cholera—constant and profuse rice-water discharges from the stomach and bowels; violent cramps in all the limbs; pulse almost imperceptible; skin cool and shrunken. Gave calomel, 15 grains; opium, 1 grain; and applied blister to abdomen. At 1 o'clock P. M. gave calomel, 30 grains; soon after which, vomiting and purging became less frequent, and ceased about midnight, at which time the pulse had increased in volume, and the skin was slightly warm." This patient recovered.

In transmitting his report for the quarter ending June 30th, 1852, Assistant Surgeon Hammond makes the following statement: "The two cases of cholera reported in June are the first that have occurred among the troops stationed at this post. The men had been on detached service at the village of the Pawnee Indians, on the Platte river, about thirty miles from the State line. One of them was drunk several times on the road. They both had diarrhoea while absent, which continued after their return to Fort Kearny, but did not report sick until the rice-water discharges and cramps of cholera announced the gravity of their complaints. When I first saw them, all the violent symptoms of cholera were present, large and repeated doses of calomel were immediately resorted to, and promptly arrested the disease. I have seen some five or six cases of Asiatic cholera among the emigrants; all of which proved fatal. In these cases, there had been premonitory diarrhoea of several days, and even weeks' standing. I have had frequent occasion to treat this diarrhoea, and found it to yield readily under the use of calomel with a very small portion of opium. The treatment which I have found most beneficial, in fully developed cholera, was large and repeated doses of calomel. This remedy has seldom failed to produce a prompt and decided alleviation of the symptoms, when given in doses of from 20 to 60 grains, before the total prostration of the stage of collapse."

The reports from Fort Kearny for June and September, 1854, show, that while the troops continued healthy, cholera prevailed among the emigrants. The reports for the summer of 1853 make no mention of this disease.

The case of cholera reported in the abstract for the second quarter of 1850, and the thirty cases in the third quarter of that year, occurred at Fort Laramie. Respecting this disease, Surgeon S. P. Moore makes the following remarks, in transmitting his report of sick at that post, for the third quarter of 1850:

"The Asiatic cholera, one of the most formidable and destructive pestilences the world has ever known, made its appearance at this post during the past season. I do not intend to give more than a brief sketch of the epidemic, and to trace its progress to this station. In the spring of 1849, the cholera appeared among the emigrants, in their encampments at or near the towns on the frontier, from whence they took their departure for California and Oregon; the prevalence of the disease hastened the departure of many companies, they believing the extensive and healthy prairies would dissipate all traces of the destroyer; but for a time they were mistaken, for cases of cholera continued to occur to within fifty miles of this post. Three soldiers, forming an escort from Fort Kearny, arrived here in July, 1849; one was attacked with cholera about the end of the same month, and another the 1st of August, as will be seen by my quarterly report for that period. These were the only cases at the post. This year, the progress of the disease has been somewhat different; it attacked the emigrants after they had left the frontier towns. The disease was prevailing, however, on the Missouri river, and may have prevailed among the emigrants before they took up the line of march for the land of promised riches. The emigrants were healthy when they left; it was after the emigration had been on the route many days that the disease appeared, about the Big Blue, thirty miles from Fort Kearny; from this point to the upper crossing of the Platte river, a distance of about four hundred and seventy miles, the emigrants suffered severely. Beyond the crossing, the disease disappeared. Recruits for this post left Fort Leavenworth last spring, perfectly healthy, and continued so until their road met the one from Independence on one side, and the St. Joseph's on the other, and then they were in the midst of the emigration; on the Big Blue the cholera broke out among the men. This fort is one mile south of the road to California and

Oregon, and overrun by the emigration. The first case of cholera was on the 21st of June. From the healthy state of the troops, I had hoped we should escape. It was not so; diarrhœa became quite prevalent, showing some atmospheric influence at work; and on the 4th of July another case occurred; the last case was on the 20th of the same month. Much has been written as to whether this disease is communicated from the sick to the healthy, in the manner of a contagion, or not. From the foregoing short description, it appears to depend upon a peculiar condition of the atmosphere; that all are liable to it, when under its influence, and in this way predisposed to the disease. The cholera was confined to the road, and among the emigrants. Many Indians remained on the road through curiosity, and for the purpose of begging; they paid a terrible penalty. Other bands of Indians, wiser than the above, left the road so soon as they learned there was disease among the whites, and escaped. Of the thirty cases in July, nine only were of the soldiers, who had arrived here the previous year; the other cases were from the recruits just joined, and who had journeyed with the emigration, and consequently were subjected to the cholera atmospheric influence. The hospital at this post is very small; all the patients were sent to it; yet in no instance did it attack those attached to the hospital, or the other patients. The two cases that occurred in July and August, 1849, were alone; the command continued healthy. Not a single case of cholera occurred at the post; but many persons were necessarily exposed, and, if the disease is contagious, it is incredible that so great a number of persons exposed should escape. It appears difficult to account for all the phenomena connected with the spread of this disease, without the existence of another agency than contagion. Many hypotheses have been raised to explain this influence, but they do not rest on facts, and we must admit our ignorance of the nature of this agency. If epidemic influenza is contagious, so is Asiatic cholera.

“With regard to the meteorological phenomena of the past quarter, there was nothing to be observed. The post was kept in good and strict police; the diet consisting principally of fresh meat and rice. I presume I saw and prescribed for every sick emigrant passing the fort, and many were necessarily left under my charge. Stimulating emetics, in the forming stage, were prescribed with the happiest effect. It is known that active vomiting excites the action of the heart and arteries, and impels the blood from the central vessels to the surface, and should give a healthy impulse to the circulation in this disease. In the stage of collapse, I am disposed to think that the ordinary remedies of the *materia medica* are not sufficiently powerful; the patient may be considered as lost; the remedy is yet to be discovered; and I have nothing to offer which can elucidate the treatment of this disease. More extensive trials should be given to the inhalation of chloroform and oxygen gas.”

Respecting this disease, as it prevailed in the vicinity of Fort Laramie in 1852, Assistant Surgeon G. K. Wood makes the following statement: “In the summer of 1852, the number of emigrants crossing the plains from the Missouri to California was very large, and cholera appeared among them from the commencement of their march. About one thousand deaths occurred on the Platte river. The disease, although affecting all classes of the emigrants—those furnished with every possible comfort, as well as the mendicant begging his way to El Dorado—was not in a single instance communicated to those living in the country, or returning on the road from California. At Fort Laramie, the military hospital was constantly crowded with the sick; they were lying about the garrison and in tents in the surrounding country; were waited upon by the hospital attendants, visited by the soldiers, and treated by the medical officer on duty. Almost all had the disease severely; nearly all died; yet, not in a single instance was the disease communicated even to those of the garrison in most immediate contact with the sick.”

The solitary case of cholera reported in 1854 occurred at Fort Snelling, in a recruit, who landed at the fort in a state of collapse, and died in a few hours.

Assistant Surgeon Head, writing from Fort Ripley on the 1st of July, 1850, states that “since the latter part of May a strong tendency to diseases of the intestines, chiefly diarrhœa



and acute dysentery, has been observed, principally among citizens employed in the quartermaster's department, settlers in the country, and some of the Indian tribes in our neighborhood. The same disposition was remarked last summer and autumn, to a degree very unusual in so high a latitude." In the report of this officer for September, 1851, the prevalence of diarrhœa and dysentery in the vicinity of Fort Ripley is again remarked.

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	7,308		6,970		7,306		7,335		7,230			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica..	20	3	20	1	38	1	30	0	108	5	1 in 21	14.9
Catarrhus -----	656	0	475	0	419	0	628	0	2178	0	0 in 2178	301
Phthisis pulmonalis.....	7	5	9	5	7	5	7	0	30	15	1 in 2	4
Pleuritis -----	49	0	47	2	21	0	36	0	153	2	1 in 76	21
Pneumonia -----	21	2	33	0	8	0	25	2	87	4	1 in 22	10.6
All other diseases of this system -----	9	0	11	0	23	0	12	0	55	0	0 in 55	7.6
Total -----	762	10	595	8	516	6	738	2	2611	26	1 in 100	361
Rheumatismus -----	238	2	291	0	270	1	259	0	1058	3	1 in 352	146

The influenza prevailed epidemically at Forts Crawford, Winnebago, and Snelling, in July and August, 1843. No mention is made of the disease at or in the vicinity of Fort Atkinson, the only remaining post in this region then occupied.

With reference to the diseases of the respiratory system at Fort Laramie, Assistant Surgeon G. K. Wood submits the following remarks:

"The climate of those broad and elevated table-lands which skirt the base of the Rocky Mountains on the east, is especially beneficial to persons suffering from pulmonary disease, or with a scrofulous diathesis. This has been known to the French inhabitants of the upper Mississippi and Missouri for many years; and it has been their custom, since the settlement of that portion of the country, to send the younger members of their families, who showed any tendency to diseases of the lungs, to pass their youth among the trappers of the plains and mountains. The beneficial result of this course, no doubt, depends, in a great measure, upon the mode of life led by these persons—their regular habits, constant exercise in the open air, and the absence of the enervating influences incident to life in cities; but that more is due to the climate itself, is shown by the fact, that among the troops stationed in this region (whose habits are much the same everywhere), this class of disease is of very rare occurrence. The reports from the line of posts stretching from the upper Platte, through New Mexico, to the Rio Grande, give a smaller proportion of cases of pulmonary disease than those from any other portion of the United States. The air in this region is almost devoid of moisture; there are no sudden changes of temperature; the depressing heats of the eastern summers are never felt; and, although in the north the winters are extremely cold, a stimulant and tonic effect is the only result of exposure in the open air.

"It is of great importance that the climate of this region should be generally known, that the present injudicious course of sending consumptives to the hot, low, and moist coast and

islands of the Gulf of Mexico should be abandoned. In diseases of debility, the remedies are tonics and stimulants. What is more debilitating than affections of the lungs, and what less tonic than heat and moisture combined, as is found in the climate of the Gulf coast? It is simply not cold, and has no other advantage over the northern States. The towns of New Mexico should be selected as a refuge for those showing a tendency to disease of the lungs, or scrofula, anywhere east of the Rocky Mountains; and west of the region where 'northerners' prevail."

The reports of sick contain no other special remark concerning diseases of the respiratory system, if we except the following, respecting consumption, by Surgeon George F. Turner, in December, 1842: "Considering the medical topography of Fort Snelling, the striking vicissitudes of temperature at all seasons, the high annual range of the thermometer, and the peculiarly exposed position of the station in reference to winds, it might be suspected of favoring the development of phthisis pulmonalis. The fact, however, is otherwise; for of 2,267 cases of disease treated at this post during the last *ten years*, *seven* cases only are registered as phthisis; a ratio which will probably compare favorably with that of any military post in the Union."

SCURVY.—This disease manifested itself among the troops at Forts Kearny and Laramie in the first and second quarters of 1849 and 1850. Surgeon S. P. Moore's report for the first quarter of 1850 has the following remarks:

"The scurvy has increased to a much greater degree than was anticipated. Thirteen of the cases were very severe, attended by great lassitude; stiffness of the knees and feet; respiration difficult upon the slightest exertion; the countenance exhibiting a pale, sallow, and bloated appearance; maculae first on the legs, then thighs and arms; œdematous swelling of the legs, and extensive anasarcaous effusions; the gums spongy and tender, and apt to bleed on the slightest touch; the urine turbid and dark colored; the muscular power much prostrated; the blood dissolved. Indurations of the muscles, and severe pain in the thighs, back, and knees, were frequent. In some of the cases, pain in the intestines, and constipation; extensive subcuticular extravasations of blood on the extremities and other parts of the body; passive hæmorrhages from the gums and nose, the gums separating from the teeth, and the teeth becoming loose in their sockets. In the fatal case, extreme prostration occurred, with anxious and oppressed respiration, dysenteric discharges, and convulsions. The habitual use of salt and unwholesome food, conjoined with fatiguing labor, were the exciting causes of the disease. In treating the disease, the causes have been removed as much as possible; fresh animal food was given in conjunction with vegetable acid drinks. During convalescence much benefit was derived from tonics, particularly the mineral acids. The solution of nitrate of potash in vinegar, so highly spoken of, failed to produce any beneficial results; on the contrary, it caused pain in the intestines and diarrhœa." In a subsequent report, Surgeon Moore observes that the almost entire exemption of the troops from scurvy is due to the liberal supply of anti-scorbutics furnished by the Subsistence Department.



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ABSTRACTS

OF THE

PRINCIPAL DISEASES AND DEATHS

OCCURRING AMONG THE TROOPS

IN THE

NORTHERN DIVISION.

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## REPORT ON THE SICKNESS AND MORTALITY

No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG THE

CLASSES OF DISEASES.	YEARS.....	FIRST QUARTER.											
		1839.		1840.		1841.		1842.		1843.		1844.	
		MEAN STRENGTH.....		.....		129.		329.		529.		423.	
		SPECIFIC DISEASES.		Cases	Died.	Cases	Died.	Cases	Died.	Cases	Died.	Cases	Died.
Fever.	Febris continua communis.....									1			
	Febris intermittens quotidiana.....												
	Febris intermittens tertiana.....												
	Febris intermittens quartana.....												
	Febris remittens.....												
	Febris typhus.....												
	Febris typhus enterodes.....												
Eruptive fevers.....	Erysipelas.....							1					
	Rubeola.....												
	Scarlatina.....												
	Varola.....												
Diseases of the organs connected with the digestive system.	Variceloid.....												
	Cholera Asiatica.....												
	Dysentery.....					1		4		3		5	
	Dysentery acuta.....					1				1		1	
	Dysentery chronica.....							1					
	Enteritis.....												
	Hepatitis acuta.....												
	Hepatitis chronica.....									1			
	Obstipatio.....							1		2		2	
	All other diseases of this system.....					1		9		8		8	
Diseases of the respiratory system.	Bronchitis acuta et chronica.....											1	
	Catarrhus.....					18		32		25		17	
	Phthisis pulmonalis.....					1		3					
	Pleuritis.....					3		1				1	
	Pneumonia.....					1		8		1		1	
	All other diseases of this system.....					1				2			
Diseases of the brain and nervous system.	Cephalalgia.....					1				1		1	
	Delirium tremens.....							2					
	Epilepsia.....							3				1	
	Neuralgia.....												
	All other diseases of this system.....					1		2		1			
Diseases of the urinary and genital organs.	Gonorrhoea.....							2		8		1	
	Stricture urethrae.....												
	Syphilis primitiva.....												
	Syphilis consecutiva.....					1						1	
Diseases of the serous and exhalant vessels.	All other diseases of this class.....												
	Ascites.....												
	Pernio.....											1	
Diseases of the fibrous & muscular structures.	Podagra.....							1				1	
	Rheumatismus acutus et chronicus.....					3		7		7		5	
	Fistula.....												
Abscesses and ulcers....	Phlegmon et abscessus.....					1		1		8		3	
	Ulcus.....									1		1	
	Andarstio.....							1		1		1	
Wounds and injuries....	Contusio.....					3		7		17		11	
	Fractura.....							2		2		1	
	Luxatio.....											1	
	Sub-luxatio.....					3		3		3		7	
	Vulnus incisum.....					1		6		5		2	
	Vulnus laceratum.....							1		4		4	
	Vulnus punctum.....							2				1	
	Vulnus sclopeticum.....												
	Delirias.....									2		1	
	Ebrietas.....					2		2	1	2		9	
Miscellaneous.....	Hæmorrhoids.....							3		1			
	Hæma.....											1	
	Morbi cutis.....					2		2		2			
	Morbi oculi.....					1		8		4		3	
	All other diseases.....					4		7		5		5	
Total.....						53		122	1	118		98	



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## REPORT ON THE SICKNESS AND MORTALITY

No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG THE

CLASSES OF DISEASES.	YEARS .....	SECOND QUARTER.											
		1839.		1840.		1841.		1842.		1843.		1844.	
		MEAN STRENGTH .....				132.		513.		511.		403.	
		SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers.....	Febris continua communis.....					1		3		2			
	Febris intermittens quotidiana.....							1					
	Febris intermittens tertiana.....					1						2	
	Febris intermittens quartana.....					1							
	Febris remittens.....							3		1			
	Febris typhus.....												
Eruptive fevers.....	Febris typhus icterodes.....												
	Erysipelas.....									2			
	Rubeola.....												
	Scarlatina.....												
	Variola.....												
	Varoloid.....												
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....												
	Diarrhea.....							14		4		5	
	Dysentery acuta.....					3				2		1	
	Dysentery chronica.....							1					
	Hepatitis acuta.....							2		2			
	Hepatitis chronica.....												
Diseases of the respiratory system.	Obstipatio.....									4		1	
	All other diseases of this system.....					2		11		13		18	
	Bronchitis, acuta et chronica.....							1					
	Catarrhus.....					9		24		64		6	
	Phthisis pulmonalis.....						1			2	1		
	Pleuritis.....					2		4		3		2	
Diseases of the brain and nervous system.	Pneumonia.....							3				3	
	All other diseases of this system.....											4	
	Cephalalgia.....							1		1			
	Delirium tremens.....							2				2	
	Epilepsia.....							2		1			
	Neuralgia.....												
Diseases of the urinary and genital organs.	All other diseases of this system.....							9				2	
	Gonorrhoea.....							7		6		6	
	Stricture urethrae.....									1			
	Syphilis primitiva.....							2					
	Syphilis consecutiva.....									1		2	
	All other diseases of this class.....							3				1	
Diseases of the serous and exhalent vessels.	Ascites.....												
	All other diseases of this class.....					1				1			
Diseases of the fibrous & muscular structures.	Permo.....												
	Podagra.....									1		2	
	Rheumatismus, acutus et chronicus.....					1		8		5		2	
	Fistula.....												
Abscesses and ulcers.....	Phlegmon et abscessus.....					1		19		12		8	
	Ulcus.....							2				1	
	Ambustio.....									1			
	Contusio.....							11		10		4	
Wounds and injuries.....	Fractura.....							1		2			
	Luxatio.....												
	Sub luxatio.....					4		4		2		1	
	Vulnus incisum.....					5		3		2		4	
	Vulnus laceratum.....							1		2		6	
	Vulnus punctum.....							1		1		2	
Miscellaneous.....	Vulnus sclopeticum.....												
	Debilitas.....							2					
	Ebrietas.....					1				2		7	
	Hæmorrhoids.....							3					
	Hernia.....											1	
	Morbi cutis.....												
	Morbi oculi.....					8		9		3		1	
	Scorbutus.....												
Total.....						49	1	186	2	163	1	99	



## TROOPS AT POSTS IN THE NORTH ATLANTIC REGION.—COAST OF NEW ENGLAND.

SECOND QUARTER.																	AGGREGATE STRENGTH.				
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
390.		112.						430.		299.		433.		429.		383.		61.		4,096.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
1								1						2						10	
1								4		6		11		3		1		5		32	
								8		2		37		5		2		13		70	
														4						5	
								1				21		3				2		31	
								7						1						8	
								1												3	
																1					1
4		4						6		4		10	1	25		17		1		94	1
1		2						3		1		4		5		10				32	
3								6				2				1				13	
								1												1	
																				4	
6								6				1		2		9		1		30	
13		5						13		5		10		18		10		1		119	
1		1						2		1		1		5		4				16	
29		8						25		13		22		27		26		1		254	
1										2		1								6	2
2		2						5		2		2		3		3				30	
2								1		1						4				14	
1		1						1				1		3		1				12	
								3						1						6	
3		1						2				2		4		1				17	
												7		2		3				15	
1																3				4	
												1		5		3				20	
6								7		3		2		6		2		2		47	
																				1	
1								2		1		4		1						11	
								3				2				2				10	
1		3								1		2				1				12	
												1				1	1			4	1
												1								1	
2																				5	
11		6						16		3		11		13		13		1		90	
								1												1	
7								15		23		17		20		9				131	
		1						1		1				6		6				18	
1		1								1				4						8	
13		12						12		10		11		29		15		2		129	
		1						3				2		1						10	
1												2		2		1				6	
12		5						4		2		6		5		5		1		51	
		2						6		4		7		5		3				41	
1		1						1		3		2		1		1				19	
2		1								1										8	
								2								1				5	
10		1						5		2		7		2		1		1		42	
1		1						1		3						2				11	
1								1								1				4	
2		1												1						4	
3								9		2		1		1		5		1		43	
1																				1	
24	1	4						12		21		23	1	41		31		3		215	4
169	1	67						197		121		234	2	256	1	198	1	35		1,774	9

## REPORT ON THE SICKNESS AND MORTALITY

No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG THE

CLASSES OF DISEASES.	YEARS.....	THIRD QUARTER.											
		1839.		1840.		1841.		1842.		1843.		1844.	
		MEAN STRENGTH.....											
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fever.	Febris continua communis.....					2		2					
	Febris intermittens quotidiana.....					1							
	Febris intermittens tertiana.....			2		4		1					
	Febris intermittens quartana.....					3							
	Febris remittens.....					1							
	Febris typhus.....			4									
	Febris typhus icterodes.....												
Eruptive fevers.	Erysipelas.....			1				1					
	Rubeola.....												
	Scarlatina.....												
	Varicella.....												
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....												
	Diarrhoea.....			17		32		12		10			
	Dysentery acute.....			15	1	52		11		10			
	Dysentery chronic.....										2		
	Enteritis.....												
	Hepatitis acute.....												
	Hepatitis chronic.....					1				1			
	Obstipation.....			8		8		11		5			
	All other diseases of this system.....			18		27	1	46		24			
	Bronchitis acute et chronic.....							1		1			
Diseases of the respiratory system.	Catarrhus.....			8		59		85		12			
	Pneumonia.....									1			
	Pleuritis.....					3		1		2			
	Pneumonia.....					1							
	All other diseases of this system.....			3		2				1			
Diseases of the brain and nervous system.	Cephalalgia.....			5		5							
	Delirium tremens.....					3		1		1			
	Epilepsia.....					1							
	Nemalgia.....												
	All other diseases of this system.....			1									
Diseases of the urinary and genital organs.	Gonorrhoea.....			7		5		6		2			
	Stricture urethrae.....												
	Syphilis primitiva.....			7		3		1		2			
	Syphilis consecutiva.....					2							
	All other diseases of this class.....			1		3		3		2			
Diseases of the serous and exhalant vessels.	Ascites.....												
	All other diseases of this class.....												
Diseases of the fibrous & muscular structures.	Pemphigus.....												
	Podagra.....										1		
	Rheumatismus acutus et chronicus.....			1		13		10		5			
Abscesses and ulcers.	Fistula.....							1					
	Phlegmon et abscessus.....			4		21		11		8			
	Cleus.....					2		2		1			
	Amblyoma.....					1		1		1			
	Amputatio.....							1					
Wounds and injuries.	Contusio.....			9		21		14		11			
	Fractura.....			1		4							
	Luxatio.....										1		
	Subluxatio.....			2		14		1		2			
	Vulnus incisum.....			2		18		2		4			
	Vulnus laceratum.....					3				1			
	Vulnus punctum.....										1		
	Vulnus scilopetrium.....			1				1					
	Debilitas.....			3		4							
	Ebrietas.....									9		12	
Miscellaneous.	Hæmorrhoea.....					4					2		
	Hæmatoma.....					1		1					
	Melancholia.....										1		
	Morbifici cibi.....					25		9		1		3	
	Various diseases.....			12		42	2	9		21			
Total.....				160	1	375	3	246	1	153			



## TROOPS AT POSTS IN THE NORTH ATLANTIC REGION.—COAST OF NEW ENGLAND.

THIRD QUARTER.														AGGREGATE STRENGTH.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.						
316.	65.		95.	404.	282.	382.	423.	168.	103.			4,037.			
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.		
1				3				2				10			
3	3			4	4	3	3	1	1			23			
			1	9		7	8		4			36			
					1	11	2					3			
												15			
												4			
1							1					4			
25			1	37	13	35	58	9	16			265			
19	8			13	9	19	15	3	1			175	1		
					1		3	6				12			
				1	1							1	1		
1												3			
3				6	1	2	7	6	10			67			
25	8		1	15	10	17	28	13	1			233	1		
1				1	1							5			
9	1		1	31	4	17	22	13	2			264			
						1	1					1	2		
2				6	2	4		1				21			
					1	1	1					4			
2				3								11			
3				1		1	1		5			21			
				10	1	3	7	3				29			
				3	2	2	3					11			
						2	1					3			
				1	1	1	7					10	1		
2	1			2		1	7	2	1			36			
2				1		1	2	2				21			
3	1			1		3		1				11			
6						2	5		1			23			
				1								1			
									1				1		
												1			
14	1		1	9	6	5	8	4	3			83			
									2			3			
11	1		1	27	11	15	18	4	2			134			
2			1	1	2	1	6	1				19			
				2	1		2					8			
				2								3			
8	4		1	20	1	12	16	19	10	4		149	1		
2	2			2			3	1	2			17			
4						1			2			8			
2				12	1	2	3	3	3			45			
4				4	2	5	4	3	1			49			
3	1			2			1		2			13			
				2	2				2			7			
												2			
				4	1	1						13			
11	1			3	2	1	6					45			
	1			2	1	2	3	1				16			
												2			
							1					2			
				2	2	4	2	1				49			
6	4		1	23	19	18	43	8	3			212	2		
175	37		9	266	3	113	206	1	298	103	62	2,203	10		

## REPORT ON THE SICKNESS AND MORTALITY

## No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG THE

CLASSES OF DISEASES.	FOURTH QUARTER.												
	YEARS .....	1839.	1840.	1841.	1842.	1843.	1844.						
	MEAN STRENGTH .....		140.	323.	551.	432.	385.						
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers .....	Febris continua communis .....			1				1					
	Febris intermittens quotidiana .....		1	1	2								
	Febris intermittens tertiana .....		1	1									
	Febris intermittens quartana .....												
	Febris remittens .....												
	Febris typhus .....		1										
Eruptive fevers .....	Febris typhus icterodes .....												
	Erysipelas .....				2	2	1						
	Rubella .....												
	Scarlatina .....												
	Varicella .....												
Diseases of the organs connected with the digestive system.	Cholera Asiatica .....												
	Diarrhoea .....		4	10	2	7	9						
	Dysentery acuta .....		5	11	7	1	11						
	Dysentery chronica .....												
	Hepatitis acuta .....			1									
	Hepatitis chronica .....												
	Obstipation .....			5	2	1	4						
Diseases of the respiratory system.	All other diseases of this system .....		7	15	17	1	9	14	1				
	Bronchitis, acuta et chronica .....		1										
	Catarrhus .....		3	19	31	21	22						
	Phthisis pulmonalis .....			1	1	1	1						
	Pleuritis .....		1	2	3	2	2						
	Pneumonia .....		1		3								
	All other diseases of this system .....			5							1		
Diseases of the brain and nervous system.	Cephalalgia .....												
	Delirium tremens .....				1								
	Epilepsia .....				2								
	Neuralgia .....												
	All other diseases of this system .....		1				1						
Diseases of the urinary and genital organs.	Gonorrhoea .....		1		2	1	3						
	Structura urethrae .....												
	Syphilis primitiva .....				7								
	Syphilis consecutiva .....				1		1						
Diseases of the serous and exhalant vessels.	All other diseases of this class .....			2	2		1						
	Ascites .....												
Diseases of the fibrous & muscular structures.	All other diseases of this class .....												
	Perio .....												
	Podagra .....											2	
Abscesses and ulcers .....	Rheumatismus, acutus et chronicus .....		2	12	15	5	5						
	Fistula .....										1		
	Phlegmon et abscessus .....		3	2	6	10	6						
	Ulcus .....		1	1	2		1						
	Amblyopia .....		1				1						
Wounds and injuries .....	Contusio .....		1	23	16	5	10						
	Fractura .....			1	1		2						
	Luxatio .....												
	Pinatio .....												
	Sub-luxatio .....		4	2	4	5	3						
	Vulnus incanum .....		5	5	1	5	5						
	Vulnus laceratum .....						1						
	Vulnus punctum .....										1		
	Vulnus sclopetarium .....						3						
	Dehiscitas .....			2	1	1	1					1	
Miscellaneous .....	Ebrietas .....		3	1	1	10	3						
	Hæmorrhoids .....			3	3	2	4						
	Hæma .....				1								
	Morbi cutis .....												
	Morbi oculi .....		3	6	5	2	1						
	Scorbutus .....												
	All other diseases .....		7	7	18	9	4						
Total .....			60	139	1	165	1	105		120	1		



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## REPORT ON THE SICKNESS AND MORTALITY

## No. 2.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG THE

CLASSES OF DISEASES.	YEARS.....	FIRST QUARTER.													
		1839.		1840.		1841.		1842.		1843.		1844.			
		MEAN STRENGTH.....		217.		370.		471.		698.		513.		501.	
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fever.	Febris continua communis.....					1									
	Febris intermittens quotidiana.....	7				6									
	Febris intermittens tertiana.....			5		3		10		7					
	Febris intermittens quatana.....														
	Febris remittens.....	3						2							
Eruptive fevers.	Febris typhus.....					1		6	3						
	Erysipelas.....	2		2		3	1								
	Rubeola.....														
	Scarlatina.....														
	Varicella.....														
Diseases of the organs connected with the digestive system.	Variceloid.....														
	Cholera Asiatica.....														
	Diarrhoea.....	2		6		4	2	27		6		7			
	Dysentery acuta.....	3						1		5		1			
	Dysentery chronica.....					1									
Diseases of the respiratory system.	Enteritis.....														
	Hepatitis acuta.....							1							
	Hepatitis chronica.....						1								
	Obstipatio.....			8		6		7		3		7			
	All other diseases of this system.....			3		4		25		5		8			
Diseases of the brain and nervous system.	Bronchitis acuta et chronica.....							1	1			14			
	Catarrhus.....	28		36		44		216		43		45			
	Phthisis pulmonalis.....	1	1		1	2	2	1	3	1					
	Pleuritis.....					1									
	Pneumonia.....	1		1		3	2	5	1	2					
Diseases of the urinary and genital organs.	All other diseases of this system.....	1						4							
	Cephalalgia.....					2						2			
	Delirium tremens.....			1						1		3			
	Epilepsia.....							8							
	Neuralgia.....														
Diseases of the serous and exhalant vessels.	All other diseases of this system.....							7	1	2		1			
	Gonorrhoea.....	6		8		14		12		2		12			
	Stricture urethrae.....							2				1			
	Syphilis primitiva.....	3		1		3		5		10		15			
	Syphilis consecutiva.....							1							
Diseases of the fibrous & muscular structures.	All other diseases of this class.....	2		3		3		3		3		2			
	Ascites.....				1										
	All other diseases of this class.....														
	Peritonitis.....					1									
	Podagra.....														
Abscesses and ulcers.	Rheumatismus, acutus et chronicus.....	1		11		4		34		6		21			
	Fistula.....											2			
	Phlegmon et abscessus.....	2						12		3		13			
	Ulcus.....	2		4		6		8							
	Amblyopia.....											1			
Wounds and injuries.	Contusio.....			1		5		25		7		11			
	Fractura.....	1				1		1							
	Luxatio.....	3										1			
	Sub luxatio.....					2		4		3		6			
	Vulnus incisum.....			3		5		3		6		8			
Miscellaneous.	Vulnus laceratum.....														
	Vulnus punctum.....							5							
	Vulnus sclopetarium.....							1							
	Debilitas.....					1						2			
	Ebrietas.....									1		5			
Total.	Hæmorrhoids.....			2				6				1			
	Hæma.....	1				1									
	Morbi cutis.....											3			
	Morbi oculi.....	1		20		14		17		2		4			
	Scorbutus.....														
All other diseases.....		54	1	58		173	2	154		37		28			
Total.....		124	2	173	2	314	10	617	9	155		224			



AMONG THE TROOPS IN THE NORTHERN DIVISION.

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TROOPS AT POSTS IN THE NORTH ATLANTIC REGION.—HARBOR OF NEW YORK.

FIRST QUARTER.																					AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.				
607.		397.		508.		555.		602.		582.		654.		549.		790.		792.		8,806.		
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
				2				1												4		
				9		22						1		15		7		2		69		
3		8						7		16		118		1		21		27		236		
				1														3		4		
						3		2		1		22		1		3				37		
						2	2													9	5	
1						4				1		2		1						16	1	
1																		2		3		
														1						1		
						7	1	4	1					1	1			3		15	3	
						4		2						1						7		
11		7		36		44		79	4	26		21	1	15		20		65		376	7	
				4		1		1		8	1	5		7		3		6		48	1	
						1	1									1				3	1	
												1								1		
				2																3		
																					1	
18		9		30		27		11		1		17		5		13		27		169		
44		13		26		78		38		13		36		8		24		22		347		
				1								1		1				5		23	1	
194		122		320		214		95		32		65		47		29		170		1,700		
						1				1								2	1	9	8	
						3	1			8	1	13		9		2		5		41	2	
				2						3	2	17		4		10	2	2		50	7	
		1		2		2												2		12		
				2		1		1		1				1						10		
												4				1	1			10	1	
		1		6		3						1				1		2		22		
																		4		4		
2		2			1					2	1	1		6		2				25	3	
11		3		46		26		16		4		8		1		17		7		193		
1						1														5		
21		10		4		7		11		10		11		4		10		27		152		
				6						1				1		6		13		28		
4		2		4		1		6		1		4		5		1		3		47		
																1					2	
																		1		1		
				6								3		5				18		33		
14		17		15		8		11		4		9		5		20		14	1	194	1	
				2		3										1				8		
6		10		8		15		16		6		17		16		11		5		140		
9		3		29		28		10		5		1		1		1		8		115		
4		1		3		4										1		2		16		
10		7		15		4		18		9		18		16		3		24		173		
1				2		1				1				1				4		13		
																		2		6		
11		5		12		7		1		3		5		1		6		5		71		
1		2		7		8		2		2		2		2		4		2		57		
								1										5		6		
		1		1		2				3		1								13		
												1								2		
												3		1				10		17		
9		5		4		5		10		1		2		2		7		3		54		
3		1		5		2		3		1		3		2		2		4		35		
		1		4		3						2		2		1		1		16		
		1				4		2		1		2		3		1				17		
7		6		9		8		2		3		5		7		5		5		115		
												1		1				1		3		
70		54	1	196		184		96	1	45		20		32	1	49		32		1,282	6	
456		292	1	821	1	738	5	446	6	213	5	443	1	232	3	283	3	345	2	6,076	50	

## REPORT ON THE SICKNESS AND MORTALITY

No. 2.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG THE

CLASSES OF DISEASES.	YEARS .....	SECOND QUARTER.											
		1839.	1840.	1841.	1842.	1843.	1844.						
	MEAN STRENGTH .....	671.	550.	431.	601.	419.	464.						
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fever.	Febris continua communis.....			1		1							
	Febris intermittens quotidiana.....			1		1		11					
	Febris intermittens tertiana.....	11		8		77	8	39		1			
	Febris intermittens quartana.....									6			
	Febris remittens.....				1	2	1	3	1				
	Febris typhus.....												
Eruptive fevers.....	Erysipelas.....				3							1	
	Rubeola.....				6	7							
	Scarlatina.....												
	Varicella.....					1							
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....												
	Diarrhoea.....	59	51	35	35	10	30						
	Dysentery acuta.....	13	6	2	1	3							
	Dysentery chronica.....			6		1							
	Enteritis.....												
	Hepatitis acuta.....												
	Hepatitis chronica.....												
	Obstipation.....		36	20	1	24	13	34					
	All other diseases of this system.....	2	20	40	17	7	14						
	Bronchitis, acuta et chronica.....							1					
Diseases of the respiratory system.	Catarrhus.....	84	28	102	95	174	32						
	Phthisis pulmonalis.....	5		4	3	2	1	1					
	Pleuritis.....					1							
	Pneumonia.....				1	1							
	All other diseases of this system.....	3		2				1	1				
Diseases of the brain and nervous system.	Cephalalgia.....			3									
	Delirium tremens.....			1									
	Epilepsia.....	3	2			2							
	Neuralgia.....												
	All other diseases of this system.....	9	3	4	3	1							
Diseases of the urinary and genital organs.	Gonorrhoea.....	6	23	16	12		15						
	Stricture urethrae.....					1							
	Syphilis primitiva.....	8	7	9	6	12	6						
	Syphilis consecutiva.....			2									
Diseases of the serous and exhalant vessels.	All other diseases of this class.....	2	6	4	1	7	1						
	Ascites.....			1									
Diseases of the fibrous & muscular structures.	Pericarditis.....												
	Podagra.....												
	Rheumatismus, acutus et chronicus.....	21	13	15	25	13	32						
Abscesses and ulcers.....	Fistula.....					1							
	Phlegmon et abscessus.....	1	1	14	13	8	18						
	Ulcus.....	5	10	10	8		2						
	Ambustio.....		1		2								
Wounds and injuries.....	Amputatio.....			1									
	Contusio.....	15	6	3	14	6	19						
	Fractura.....	1			1								
	Luxatio.....												
	Sub luxatio.....	6	5	6	10	8	12						
	Vulnus incisum.....		9	4	6	8	3						
	Vulnus laceratum.....												
	Vulnus punctum.....				2	1							
	Vulnus sclopeticum.....												
	Debilitas.....	34		5	1		2						
Miscellaneous.....	Ebrietas.....				7		5						
	Hæmorrhoids.....	3	2	1		2	3						
	Hernia.....	2		2		2	1						
	Morbi cutis.....												
	Morbi oculi.....	7	52	22	19		10						
	Scorbutus.....	35		3									
All other diseases.....		98	300	197	1	171	71	72					
Total.....		433	1	604	633	5	496	5	402	3	324		



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SECOND QUARTER.																AGGREGATE STRENGTH.					
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
539.		430.		796.		640.		583.		682.		560.		559.		510.		551.		8,986.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
								1				2		3		2				10	
										13		10		33		5		48		122	
19		7		50		52		12		14		12		3		15		14		342	
												1		1		2		9		19	
				1		3						32								42	2
				2						9				1		1				11	2
		1		4		3				1				2		1				16	
														4				2		19	
																		1		1	
						1	1							1						3	1
								1	1									2		3	1
30		45		98		96		106		14		14		20		23		26		692	
		1		4		3		1	1			4				4		3		45	1
																1				8	1
												2		2						4	
				1	1							2								3	1
						1														1	
31		36		43		33		31				6		17		15		28		357	1
22		16		17		74		29		31		34		13		14		7		357	
		54								3		3		1						62	
73				121		153		71		64		41		40		6		16		1,100	
1				1						3		1						1		15	8
				1		1						6		10						18	1
										9	1	4	1	3		2	1			20	4
				2						2		1		1	1	1		1		14	2
										3		2		8		4		1		22	
				1		1				2	1			1			2			7	2
1		1		6		4		1		1		2				1		2		26	
														2						2	
		1		2						1				1	2			1		24	4
7		14		48		11		12		6		6		7		10		9		202	
						1				3		1								7	
15		10		16		9		22		2		4		1		8		21		156	

## REPORT ON THE SICKNESS AND MORTALITY

No. 2 —ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG THE

CLASSES OF DISEASES.	THIRD QUARTER.											
	YEARS.		1839.	1840.	1841.	1842.	1843.	1844.				
	MEAN STRENGTH.		633.	954.	1,228.	697.	461.	626.				
SPECIFIC DISEASES.			Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers	Febris continua communis				1							
	Febris intermittens quotidiana	22	2		8	7	6					
	Febris intermittens tertiana		19		69	41	23	22				
	Febris intermittens quartana				2							
	Febris remittens	2	1		4	4		1				
	Febris typhus				2	1			1			
Eruptive fevers	Erysipelas	5			1		1					
	Rubeola				2	1						
	Varicella		1			1	1					
	Varioloid		1									
Diseases of the organs connected with the digestive system.	Cholera Asiatica											
	Diarrhoea	101	2	398	1	255	162	57	188			
	Dysentery acuta	9		52	192	3	39	6	1			
	Dysentery chronica				5	4						
	Enteritis											
	Hepatitis acuta	1										
	Hepatitis chronica			1								
	Obstipatio			65	18	13	5	67				
	All other diseases of this system	12		15	61	79	18	24				
	Diseases of the respiratory system.	Bronchitis, acuta et chronica										
Catarrhus		52		133	61	73	28	76				
Phthisis pulmonalis		7			4	1	2	1	1	1		
Pleuritis												
Pneumonia		1		2	2							
All other diseases of this system				1	1	1		1				
Diseases of the brain and nervous system.	Cephalalgia			6	3					7		
	Delirium tremens	6	1		3	1						
	Epilepsia			1	3	2						
	Neuralgia				1							
	All other diseases of this system	16				1						
	Gonorrhoea	38		21	21	7	6	10				
Diseases of the urinary and genital organs.	Stricture urethrae				1			1				
	Syphilis primitiva	40		8	8	9	9	29				
	Syphilis consecutiva			3	1							
	All other diseases of this class	6		5	7	2	6	5				
Diseases of the serous and exhalant vessels.	Ascites			1								
	All other diseases of this class				1							
Diseases of the fibrous & muscular structures.	Permo											
	Podagra											
	Rheumatismus, acutus et chronicus	21		31	17	16	16	36				
	Fistula				1		1					
Abscesses and ulcers.	Phlegmon et abscessus			35	22	8	18	31				
	Ulcus	6		16	12	6	3	7				
	Ambustio			1		3						
	Amputatio				1							
Wounds and injuries.	Contusio	9		15	14	16	28	17				
	Fractura					1		1				
	Luxatio	2		1				1				
	Sub luxatio			8	3	6	8	11				
	Vulnus incisum			15	13	5	16	5				
	Vulnus laceratum											
	Vulnus punctum						1	1				
	Vulnus sclopetreum			1	1							
	Debilitas				2						3	
	Eclampsia					1	9	14				
Miscellaneous	Hæmorrhoids	2		8	5	2	4	2				
	Hæma	1			3	1	2					
	Morb. cutis			3			1	1				
	Morb. oculi	9		82	23	14	2	6				
	Scorbutus	1										
	All other diseases	116		622	419	1	204	1	114	2	152	
	Total	485	3	1,577	1	1,305	10	726	4	390	3	721



AMONG THE TROOPS IN THE NORTHERN DIVISION.

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TROOPS AT POSTS IN THE NORTH ATLANTIC REGION.—HARBOR OF NEW YORK.

THIRD QUARTER.																				AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
508.		790.		582.		478.		579.		525.		628.		691.		448.		574.		10,402.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
										1					10					12	
		3		3						11	63		21		35					141	
13		26		28		47		10		20		3		6		31		32		390	
						22				31								18		73	
		10				3						31	5	19						75	5
				4	1															8	1
				1						1		1								10	
																				3	
																				2	1
1																				2	
								19	15					6	4	2		44	9	71	28
146		327		300		424	1	431	1	34		65		146		69		148		3,293	5
1		25		24		11		4		4		83	2	10	2	5		5		471	7
				1		9		1	1					1				1		18	5
												2								2	
										1		1								3	
																				1	
20		138		77		39		39		13		15		25		11		21		566	
20		46		37		22		4		12		32		27		11		10		430	
		5		1		1		2	1			1								10	1
61		59		78		85		19		23		10		28		7		9		892	
1	1	2				4	2					1	1			3				24	8
				1								7		4						12	
								1	1											6	1
		1		1		2		1	1	1				1						10	2
		3				1				1		1		3		3				28	
			1	2						2				1				1		16	2
		3		7		1	1											2		19	1
										1		1								3	
6		2	1	3	1	2		1						1						33	2
21		38		36		35		16		4		3				7		14		287	
				1		1				1										5	
17		7		22		13		10		10		6		2		10		11		211	
1			1									1				4		1		11	1
7		4		4		7		2		2		6		1		2		1		67	
				1																2	
																				1	
																				1	
21		36		20		26		15		4		6		6		6		6		283	
												1				3				6	
32		49		16		30		14		9		16		21		18				319	
9		14		18		14		3		2				11		1		1		123	
		1		1		2		3				3		1				3		18	
								1												2	
31		15		19		11		13		15		22		17		6		18		266	
				1		1								1		3		1		9	
		1												2		2		11		20	
7		9		19		7		2		7		1		5		1		2		96	
6		7		10		9		1		2		6		6		4		5		110	
								1						1				2		4	
				2		2		2		1										9	
																				2	
3		4		9		10				1				4		3		1	11	50	1
18		14		18		5		7		1		2		4		5		5		103	
2		3		7		6		2						1		3		1		48	
1				1		6						1		1		2				19	
3		6		1		4								1		1				21	
9		11		20		25		7				4		8				1		221	
										1		1								3	
87		333		323		314	4	116	1	19		11		19		14		20		2,913	9
544	1	1,202	3	1,117	2	1,201	8	747	21	236		407	8	458	6	282	1	407	9	11,805	80

## REPORT ON THE SICKNESS AND MORTALITY

No. 2 ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG THE

		FOURTH QUARTER.									
CLASSES OF DISEASES.		YEARS.....		1839.	1840.	1841.	1842.	1843.	1844.		
		MEANS REPRESENTED.....		559.	629.	671.	514.	529.	554.		
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers.....	Febus continua communis.....			1		2					
	Febus intermittens quotidianus.....			6		9		5			
	Febus intermittens tertiana.....	20		27		10		26		1	7
	Febus intermittens quartana.....										
	Febus remittens.....	16				2		3			
	Febus typhus.....	1	1	2	2		1	1	1		1
Eruptive fevers.....	Erysipelas.....							2			
	Rubeola.....										
	Scarlatina.....										
	Varicella.....										
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....	1									
	Diarrhoea.....	76	1	81		50		23		18	24
	Dysentery acuta.....	31	1	7		40		2		3	2
	Dysentery chronica.....					4		1			
	Hepatitis acuta.....										
	Hepatitis chronica.....										
	Obturation.....	12		29		11		3		8	11
	All other diseases of this system.....	7		18		19		10		6	12
Diseases of the respiratory system.	Bronchitis, acuta et chronica.....			1						1	
	Catarrhus.....	57		125		105		32		52	97
	Phthisis pulmonalis.....	3	1	2	2	1	2				
	Pleuritis.....			1				1			
	Pneumonia.....					2				1	
	All other diseases of this system.....			1		1				2	
Diseases of the brain and nervous system.	Cephalalgia.....			1				1			
	Delirium tremens.....	2		1	1			1		2	
	Epilepsia.....	2		5		4		2		1	
	Nemaligia.....									1	
	All other diseases of this system.....	1	1			10	1	2			
	Gonorrhoea.....	20		11		11		6		5	14
Diseases of the urinary and genital organs.	Stricture urethrae.....	3									1
	Syphilis primitiva.....	15		15		14		11		7	21
	Syphilis consecutiva.....					1					
	All other diseases of this class.....	1		2		3		2		2	
Diseases of the serous and exhalant vessels.	Ascites.....	1		2							
	All other diseases of this class.....										1
Diseases of the fibrous & muscular structures.	Burns.....			2							
	Podagra.....										
	Rheumatismus, acutus et chronicus.....	21		14		23		10		15	22
	Fistula.....							1			
Abscesses and ulcers.....	Phlegmon et abscessus.....	2		5		2		9		13	12
	Ulcus.....	8		5		8		4		1	6
	Amblyopia.....	1		1						1	
	Amputation.....	1									
	Contusio.....	2		5		4		13		5	13
	Fractura.....	1				1				1	
Wounds and injuries.....	Luxatio.....										
	Subluxatio.....	2				2		7		10	10
	Vulnus incisum.....	7		6		8		4		5	3
	Vulnus laceratum.....									2	
	Vulnus punctum.....					1					
	Vulnus sclopeticum.....			1							
Miscellaneous.....	Doluitas.....	1									
	Eclampsia.....									7	8
	Hæmorrhæa.....	1		2		3				1	2
	Hæma.....	1		1							
	Morbificus.....			2							
	Morbificus.....	10		39		6		7		2	
	Scorbutus.....										
	All other diseases.....	103		222		173	1	81		65	37
	Total.....	422	5	648	5	592	5	270	1	238	303



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AMONG THE TROOPS IN THE NORTHERN DIVISION.

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AMONG THE CADETS AND TROOPS AT WEST POINT.—NEW YORK.

FIRST QUARTER.																AGGREGATE STRENGTH.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	6,855.							
378.	370.	378.	437.	477.	493.	533.	486.	517.	482.								
Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Total cases.	Total died.						
11	10		8	5	9	8		5		71							
				3				7		10							
						3		6		25							
							1			1							
				1	1					1	1						
1				4		1				3							
2								2		4							
				2		1	1			4							
				4						3	1						
25	13	29	19	53	23	28	21	9	18	402							
2						2				14							
									1	2							
									1	1							
										1							
4	21	15	12	12	1	1	5	4	13	194							
77	87	28	67	40	33	24	20	18	29	624							
217	135	123	133	172	103	95	137	139	166	1,967							
		1						1	1	2	2						
		6	1		1			1	1	17							
1	1					1			1	4	1						
2			4	11	1	1		2	2	23							
115	144	108	90	50	110	44	29	23	50	1,186							
			2	2	2		1			7							
				2			3	1	2	8							
		2	3	1	1		3			12							
		2	1					6	3	15							
			2					1		3							
1			1							2							
1	1		2					1	2	10							
					3				1	4							
10	7	16	13	19	14	13	6	9	19	291							
10	20	10	19	16	21	16	21	63	67	308							
			1			1				10							
		2	3		1	1	1		1	11							
										1							
37	41	43	24	27	28	29	26	14	58	489							
				2		1		2		7							
							3	3	3	26							
24	28	5	15	19	9	11	1	10	19	178							
11	6	3	6	5	2	4	4	2	7	95							
		1				1	3			5							
					2	1	1			7							
				2	1				1	4							
				1						1							
5	2	4	4	2	2	1	3			43							
	4			3		1	1		3	16							
4	8	3	12	5	6	6	9	5	3	96							
106	1	86	75	40	75	75	56	73	119	1,201	1						
666	2	613	476	482	542	1	445	354	1	378	477	1	656	7,325	6		

## REPORT ON THE SICKNESS AND MORTALITY

No. 3. ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	YEARS.....	SECOND QUARTER.											
		1839.		1840.		1841.		1842.		1843.		1844.	
		373.		382.		374.		381.		373.		373.	
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fever.	Febbris continua continua.....	5	.....	5	.....	11	.....	.....	.....	5	.....	2	.....
	Febbris intermittens quotidian.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Febbris intermittens tertiana.....	.....	.....	.....	.....	18	.....	20	.....	20	.....	4	.....
	Febbris intermittens quartana.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Febbris remittens.....	.....	.....	.....	.....	.....	.....	2	1	.....	.....	.....	.....
	Febbris typhus.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Eruptive fevers.	Febri typhus icterodes.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Erysipelas.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Rubeola.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....
	Scarlatina.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Varicella.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Varicella.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Diarrhoea.....	6	.....	21	.....	16	.....	14	.....	11	.....	40	.....
	Dysentery acuta.....	.....	.....	.....	.....	.....	.....	6	.....	1	.....	1	.....
	Dysentery chronica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Enteritis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Hepatitis acuta.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Diseases of the respiratory system.	Hepatitis chronica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Obstipation.....	.....	.....	.....	.....	35	.....	16	.....	17	.....	11	.....
	All other diseases of this system.....	65	.....	17	.....	35	.....	58	.....	8	.....	28	.....
	Bronchitis acuta et chronica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Catarrhus.....	50	.....	53	.....	92	.....	77	.....	303	.....	134	.....
	Phtisis pulmonalis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Diseases of the brain and nervous system.	Pleuritis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Pneumonia.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
	All other diseases of this system.....	.....	.....	.....	.....	.....	.....	11	.....	12	.....	16	.....
	Cephalalgia.....	76	.....	76	.....	59	.....	70	.....	82	.....	108	.....
	Delirium tremens.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Epilepsia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
Diseases of the urinary and genital organs.	Nephalgia.....	.....	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....
	All other diseases of this system.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Gonorrhoea.....	1	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Stricture.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Syphilis primaria.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
	Syphilis consecutiva.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Diseases of the serous and exhalant vessels.	All other diseases of this class.....	2	.....	1	.....	.....	.....	1	.....	.....	.....	1	.....
	Ascites.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	All other diseases of this class.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Diseases of the fibrous & muscular structures.	Peritonitis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Pleuritis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Rheumatismus acutus et chronicus.....	29	.....	12	.....	25	.....	14	1	9	.....	7	.....
	Erysipelas.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Phlegmon et abscessus.....	15	.....	16	.....	.....	.....	15	.....	8	.....	11	.....
	Ulcus.....	35	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Abscesses and ulcers.	Anthrax.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	1	.....
	Contusio.....	32	.....	33	.....	25	.....	16	.....	32	.....	29	.....
	Erysipelas.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Luxatio.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Subluxatio.....	.....	.....	.....	.....	25	.....	11	.....	8	.....	20	.....
	Vulnus contusum.....	6	.....	34	.....	6	.....	8	.....	9	.....	4	.....
Wounds and injuries.	Vulnus laceratum.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Vulnus punctum.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Vulnus scissile.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Debilitas.....	.....	.....	1	.....	.....	.....	3	.....	2	.....	3	.....
	Claustrum.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Hæmorrhagia.....	3	.....	7	.....	10	.....	4	.....	.....	.....	2	.....
Miscellaneous.	Hæmorrhagia.....	.....	.....	.....	.....	.....	.....	2	.....	1	.....	.....	.....
	Morbus.....	2	.....	.....	.....	.....	.....	1	.....	.....	.....	2	.....
	Morbus.....	7	.....	1	.....	1	.....	8	.....	5	.....	.....	.....
	All other diseases.....	.....	.....	34	.....	113	.....	70	.....	92	.....	122	.....
	Total.....	337	.....	321	.....	479	.....	416	2	632	.....	549	.....



## AMONG THE CADETS AND TROOPS AT WEST POINT.--NEW YORK.

SECOND QUARTER.																		AGGREGATE SIX MONTHS.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.										
364.	368.	391.	456.	454.	494.	480.	436.	443.	423.									6,565.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
7	10		15	4	15	7	4											90	
			2					6										8	
2		9		16	27	10	11	6	14									157	
			4			1			1									8	1
		1	2															3	
		1																3	
			1															1	
37	37	35	35	44	62	24	22	12	49									465	
			7			1												18	
9	6	8	27	19	9	3	13	3	19									195	
59	61	30	52	43	36	20	23	14	29									558	
88	83	113	89	50	80	87	83	100	61									1,543	
						1	1		1									1	3
		3					1		1									5	
							1		1									4	
			5	1	1	2	3	2	6									62	
120	135	129	107	96	87	36	55	41	27									1,304	
							1	1										1	1
			4	1			2	1										9	
						1	5	1	1									12	
		12	8	1	5	1		1	1	1	1	1						28	2
		2	2	2	1	1	1	1	5									19	
					1			2										3	
		1			1	1												4	
								1										1	
	1							3	1									10	
	1		1															2	
11	11	10	11	4	12	7	4	29	15									201	1
9	37	9	11	29	32	25	26	104	48									395	
			1	1			2											42	
1		1		1			2											12	
34	24	10	23	22	32	51	34	35	47									510	
				2					1									1	
				1		7	7	7	4									27	
21	19	10	18	35	20	8		9	17									221	
13	10	14	10	6	4	5	6	8	8									151	
			1	3	3	1												8	
					1	1	3		1									6	
				1														1	
3		8	2		1	1	4		3									34	
		1																1	
2	6	5	3	1	3	3	2	1										52	
							1											4	
2			1		2	3	2	2	2									24	
10	6	5	13	5	6	15	6	6	6									103	
117	91	74	90	79	91	88	76	86	83									1,316	
545	538	521	515	1	454	528	410	1	400	1	180	2	451	1				7,627	8

## REPORT ON THE SICKNESS AND MORTALITY

No. 3 — ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	YEARS.....	THIRD QUARTER.											
		1839.		1840.		1841.		1842.		1843.		1844.	
		408.		404.		432.		414.		371.		392.	
		SPECIFIC DISEASES.											
		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fever	Febris continua communis .....	9		7		6				2		17	
	Febris intermittens quotidiana .....	2				15							
	Febris intermittens tertiana .....			40				34		15		5	
	Febris intermittens quartana .....												
	Febris remittens .....							6					
	Febris typhus .....											1	
Eruptive fevers	Febris typhus interodes .....												
	Erysipelas .....												
	Scarlatina .....												
	Rubcola .....												
	Varicella .....												
	Varioloid .....												
Diseases of the organs connected with the digestive system.	Cholera Asiatica .....												
	Diarrhoea .....	44		77		144		78		96		84	
	Dysentery acuta .....			24	1	51	2	14		4		2	
	Dysentery chronica .....												
	Hepatitis acuta .....												
	Hepatitis chronica .....												
Diseases of the respiratory system.	Obstipatio .....			21		33		39		10		5	
	All other diseases of this system .....	48		27		47		22		19		22	
	Bronchitis, acuta et chronica .....												
	Catarrhus .....	50		22		61		64		73		67	
	Phthisis pulmonalis .....												
	Pleuritis .....												
Diseases of the brain and nervous system.	Pneumonia .....												
	All other diseases of this system .....			1				11		22		6	
	Cephalalgia .....	45		80		51		37		61		85	
	Delirium tremens .....												
	Epilepsia .....												
	Neuralgia .....												
Diseases of the urinary and genital organs.	All other diseases of this system .....			1						6			
	Gonorrhoea .....	3		5		4				2		2	
	Stricture urethrae .....												
	Syphilis primitiva .....												
	Syphilis consecutiva .....									1			
	All other diseases of this class .....					2		1				1	
Diseases of the serous and exhalant vessels.	Ascites .....											1	
	All other diseases of this class .....											1	
	Pernio .....												
	Podagra .....												
	Rheumatismus, acutus et chronicus .....	12		10		9		12		8		11	
	Fistula .....												
Abscesses and ulcers	Phlegmon et abscessus .....			14				17		11		13	
	Ulcus .....	26						1					
	Ambustio .....									2			
	Amputatio .....												
	Contusio .....	36		23		31		33		31		58	
	Fractura .....												
Wounds and injuries	Luxatio .....												
	Sub luxatio .....	13		14		7		12		12		8	
	Vulnus incisum .....	15						12		14		14	
	Vulnus laceratum .....												
	Vulnus punctum .....							1					
	Vulnus sclopeticum .....												
Miscellaneous	Debilitas .....					7		1		2		3	
	Ebrietas .....												
	Haemorrhoids .....	6		6		4		3				6	
	Hernia .....					2							
	Morbi cutis .....					6				2		3	
	Morbi oculi .....			5		7		6		1		5	
All other diseases .....		46		238		234		142		173		160	
Total .....		355		614	2	721	2	546		567		580	



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[illegible]

## REPORT ON THE SICKNESS AND MORTALITY

## No. 3.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	YEARS .....	FOURTH QUARTER.											
		1839.		1840.		1841.		1842.		1843.		1844.	
		400.		395.		411.		399.		372.		385.	
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers.....	Febri continua communis .....	4	6	.....	1	1	.....	2	.....	11	.....		
	Febri intermittens quotidiana.....	2	.....	.....	6	.....	2	.....	4	.....			
	Febri intermittens tertiana.....	.....	9	.....	.....	.....	.....	.....	.....	.....			
	Febri intermittens quartana.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Febri remittens.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Febri typhus.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
Eruptive fevers.....	Febri typhus heterodes.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Erysipelas.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	
	Rubeola.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Scarlatina.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Variola.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
Diseases of the organs connected with the digestive system.	Varioloid.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Cholera Asiatica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Diarrhœa.....	30	21	.....	31	26	.....	20	.....	33	.....		
	Dysentœa acuta.....	.....	1	.....	.....	2	.....	2	.....	.....			
	Dysentœa chronica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Enteritis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Hepatitis acuta.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Hepatitis chronica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Obstipatio.....	.....	11	.....	14	15	.....	14	.....	16	.....		
	All other diseases of this system.....	29	25	.....	37	10	.....	14	.....	18	.....		
Diseases of the respiratory system.	Bronehitis, acuta et chronica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Catarrhus.....	141	144	.....	196	63	.....	75	.....	131	.....		
	Phthisis pulmonalis.....	.....	.....	.....	.....	.....	.....	1	.....	.....			
	Pleuritis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Pneumonia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	All other diseases of this system.....	.....	10	.....	.....	7	.....	7	.....	1	.....		
Diseases of the brain and nervous system.	Cephalalgia.....	60	58	.....	40	8	.....	111	.....	101	.....		
	Delirium tremens.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Epilepsia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Neuralgia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	All other diseases of this system.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
Diseases of the urinary and genital organs.	Gonorrhœa.....	1	2	.....	.....	3	.....	.....	.....	.....			
	Stricture urethrae.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Syphilis primitiva.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....		
	Syphilis consecutiva.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
Diseases of the serous and exhalant vessels.	All other diseases of this class.....	2	.....	.....	.....	.....	.....	1	.....	2	.....		
	Ascites.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			1
Diseases of the fibrous & muscular structures.	All other diseases of this class.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Periton.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Podagra.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
Abscesses and ulcers.....	Rheumatismus, acutus et chronicus.....	5	9	.....	20	10	.....	8	.....	16	.....		
	Fistula.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Phlegmon et abscessus.....	10	5	.....	4	13	.....	8	.....	7	.....		
	Ulcus.....	.....	.....	.....	.....	.....	.....	1	.....	.....			
	Ambustio.....	.....	8	.....	.....	.....	.....	3	.....	.....			
	Contusio.....	15	8	.....	11	30	.....	22	.....	19	.....		
Wounds and injuries.....	Fractura.....	1	2	.....	1	.....	.....	.....	.....	.....			
	Luxatio.....	.....	.....	.....	1	.....	.....	.....	.....	.....			
	Sub luxatio.....	28	11	.....	50	14	.....	14	.....	21	.....		
	Vulnus incisum.....	.....	18	.....	5	11	.....	11	.....	9	.....		
	Vulnus laceratum.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Vulnus punctum.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Vulnus sclopetum.....	.....	.....	.....	1	.....	.....	.....	.....	.....			
Miscellaneous.....	Debilitas.....	.....	.....	.....	.....	.....	.....	1	.....	5	.....		
	Ebrietas.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Hæmorrhœis.....	.....	6	.....	.....	.....	.....	1	.....	2	.....		
	Hernia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Morbi cutis.....	.....	1	.....	.....	4	.....	.....	.....	2	.....		
	Morbi oculi.....	6	7	.....	6	5	.....	2	.....	8	.....		
	All other diseases.....	79	35	.....	135	108	.....	61	.....	98	.....		
Total.....		413	397	.....	562	1 362	.....	383	.....	505	1		



AMONG THE TROOPS IN THE NORTHERN DIVISION.

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AMONG THE CADETS AND TROOPS AT WEST POINT. -NEW YORK.

FOURTH QUARTER.																				AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
375.		388.		421.		504.		512.		512.		526.		543.		497.		509.		7,149.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
9						28		7		7		4		6						95	1
						7														9	
	4		5					5		13				7		8		7		70	
												7								7	
								2				2								4	
						1														1	
																1		1		6	
	1																			1	
										2										2	
1										1				1						3	
37	42		31		25		63		43		44		27		23		27			527	
			1		4												1			11	
	1																			1	
18	30		2		11		13		5		6		3		16		6			180	
52	33		53		48		25		31		25		37		39		29			495	
78	269		114		164		78		73		101		158		100		75			1,960	
																				1	
	9		10								1		1							21	
													1							1	
					9		4		4		1		2							45	
160	151		144		88		65		32		39		36		33		42			1,168	
1	2								1		2		1							7	
	1				1		1				3		1		3		1			11	
2	5		7		3				1		2		3		1					24	
	3		2				1		1				1		3		1			18	
			1												1					2	
									1				3							6	
															3		1			4	
1	2		4		1										1		1			15	
			1																	1	
											1									1	
9	14		9		14		17		4		6		11		2		7			161	
16	16		11		14		28		22		27		49		88		60			378	
	1						1						1							4	
			2		1		1				4		1				1			21	
29	84		10		15		34		30		46		35		40		27			456	
																				4	
					1						1		3		2					8	
28			27		8		14		11		13		5		22		21			287	
8	4		4		7		8		3		5		7		5		5			110	
	9		30		3		2						1							44	
					5		1		1		1		2							10	
			1																	2	
1	2						1		2		1		1		3					17	
					1															1	
6	2				2		1		2		4									26	
1																				1	
1					3									1		5		2		19	
5	6		12		9		10				8		7		7		4			102	
95	79		52		48		82		49		63		74		169		185			1,422	
558	770		532		523		464		339		417		496		575		504			7,770	2

## REPORT ON THE SICKNESS AND MORTALITY

No. 1. ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG

CLASSES OF DISEASES.	FIRST QUARTER.												
	YEARS.....	1839.		1840.		1841.		1842.		1843.		1844.	
	MEAN STRENGTH.....	357.		497.		466.		463.		528.		348.	
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers.....	Febris continua communis.....			1		7		3					
	Febris intermittens quotidiana.....					1				6			
	Febris intermittens tertiana.....					2				8			
	Febris intermittens quartana.....												
	Febris remittens.....	3				2		1					
	Febris typhus.....												
Eruptive fevers.....	Erysipelas.....	1		2		1							
	Rubeola.....					5							
	Scarlatina.....												
	Varicella.....												
Diseases of the organs connected with the digestive system.	Varicellula.....												
	Cholera Asiatica.....												
	Dysentery.....	2		4		12		7		11		3	
	Dysentery acuta.....	1		3		2		4		1			
	Dysentery chronica.....									1			
	Enteritis.....												
	Hepatitis acuta.....												
	Hepatitis chronica.....												
	Obstipation.....	2		4		4		8				5	
	All other diseases of this system.....	8		7		14		17		17		8	
Diseases of the respiratory system.	Bronchitis acuta et chronica.....							1		4		1	
	Catarrhus.....	23		51		65		48		76		29	
	Phthisis pulmonalis.....			2		1	2	1		2	1		
	Pleuritis.....	2		2		16	1	9		9			
	Pneumonia.....	4		4		8		3		1		3	
	All other diseases of this system.....			1									
Diseases of the brain and nervous system.	Cephalalgia.....							7					
	Delirium tremens.....	1	1			4		8		4			
	Epilepsia.....	1				2		1		4			
	Notalgia.....			3		1							
	All other diseases of this system.....	1	1	1		1		1		4			
Diseases of the urinary and genital organs.	Gonorrhoea.....	1				1						2	
	Stricture urethrae.....									1			
	Syphilis primitiva.....	1		7								1	
	Syphilis consecutiva.....			2		2		1					
Diseases of the serous and exhalant vessels.	All other diseases of this class.....	2						2		2		4	
	Verres.....												
Diseases of the fibrous & muscular structures.	All other diseases of this class.....							1					
	Pericarditis.....	1		3		1				2		4	
	Pleuritis.....												
Abscesses and ulcers.....	Rheumatismus, acutus et chronicus.....	4		5		2		8		8		10	
	Tubercula.....												
	Phlegmon et abscessus.....	1		2		19		10		11		5	
	Ulcers.....	4		7		16		7		8		2	
	Amputation.....	1		1				1		7			
	Concessio cerebri.....									1			
Wounds and injuries.....	Contusio.....			7		25		5		13		3	
	Fractura.....			1				2		1		2	
	Luxatio.....											1	
	Subluxatio.....	6		1				6		5		7	
	Vulnus incisum.....	10		22		11		10		11		11	
	Vulnus laceratum.....									3		1	
Miscellaneous.....	Vulnus punctum.....							2		1		1	
	Vulnus sclopeticum.....			6									
	Debilitas.....							1					
	Ebrietas.....	5	2							7	1	12	
	Hæmorrhoea.....			5		1		4		1			
	Hæmura.....												
Miscellaneous.....	Morb. cutis.....							1		3		1	
	Morb. oculi.....	2		2		14		6		7		6	
	All other diseases.....	19		10		15		14		22		10	
	Total.....	97	4	166		255	3	200		262	2	132	



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FIRST QUARTER.																				AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
296.		87.		49.		74.		140.		135.		123.		88.		38.		41.		3,731.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
				2		7				2		1						4		27	
						1												2		7	
																				13	
																				6	
						1				1										6	
				1						1										7	
7	3					1		6	2	3		3								62	2
1								3												15	
																				1	
2						1		3				9		3		7				48	
8	3					2		7		1		8		7		2		3		112	
4						1		3		2				3				1		20	
37	2		3		2			12		3		21		15		8		9		404	
								1												7	3
	2											2								42	1
1			1			1		3										6		35	
																				1	
												2								9	
1								2												20	1
												1								9	
2						1		2								2				11	
	1																			9	1
	1																			8	
																				1	
																				9	
										1										6	
										2		1								13	
																				1	
1								1												13	
1								4		1		3		2		1		2		51	
1	</																				

## REPORT ON THE SICKNESS AND MORTALITY

No. 4.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG

CLASSES OF DISEASES.	YEARS .....	SECOND QUARTER.											
		1839.		1840.		1841.		1842.		1843.		1844.	
		457.		510.		430.		460.		521.		342.	
		SPECIFIC DISEASES.											
		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers .....	Febris continua communis.....	2		12		4		5		5		1	
	Febris intermittens quotidiana.....	3				2		8		2			
	Febris intermittens tertiana.....							8		1		1	
	Febris intermittens quartana.....							1					
	Febris remittens.....	1				1				1			
	Febris typhus.....							2					
Eruptive fevers .....	Erysipelas.....	1		1		1		2		1			
	Rubella.....					17							
	Scarlatina.....												
	Varicella.....												
Diseases of the organs connected with the digestive system.	Variceloid.....							6	1				
	Cholera Asiatica.....												
	Diarrhoea.....	2		25		21		13		18		5	
	Dysentery acuta.....	9		1		3		4		4		3	
	Dysentery chronica.....							2					
	Enteritis.....	13											
	Hepatitis acuta.....												
	Hepatitis chronica.....												
	Obstipatio.....	8		8		1		3		3		5	
	All other diseases of this system.....	14		6		10		15		17		10	
Diseases of the respiratory system.	Bronchitis, acuta et chronica.....							4		3			
	Catarrhus.....	27		23		61	1	48		84		21	
	Phtisis pulmonalis.....			1	2					1	2		
	Pleuritis.....	3		5		7		3		3		2	
	Pneumonia.....			1		5	1	5		4		2	
	All other diseases of this system.....			1		2				1		1	
Diseases of the brain and nervous system.	Cephalalgia.....							3		2		1	
	Delirium tremens.....	1	1			3		1		1		4	1
	Epilepsia.....	2				1				1			
	Nemalgia.....			3		2				1			
	All other diseases of this system.....									1	1	4	
	Gonorrhoea.....	3		8		1		5					
Diseases of the urinary and genital organs.	Stricture urethrae.....									1			
	Syphilis primitiva.....			8		2		4					
	Syphilis consecutiva.....							2		1			
	All other diseases of this class.....	1				1				2		1	
Diseases of the serous and exhalant vessels.	Ascites.....												
	All other diseases of this class.....			1									
Diseases of the fibrous & muscular structures.	Pernio.....					1				1			
	Podagra.....												
Abscesses and ulcers.....	Rheumatismus, acutus et chronicus.....	11		13		10	1	12		10		8	
	Fistula.....											1	
	Phlegmon et abscessus.....	4				9		13		18		7	
	Ulcus.....	8		9		1		8		5		1	
	Amputatio.....	2				4		3		1		1	
	Contusio.....			10		27		12		5		7	
Wounds and injuries.....	Fractura.....	1		2		2		3		6		1	
	Luxatio.....			1		1		1		1			
	Sub luxatio.....	8		10		1		8		8		5	
	Vulnus incisum.....	13		16		10		8		9		3	
	Vulnus laceratum.....			4									
	Vulnus punctum.....							1					
	Vulnus sclopeticum.....									3			
	Debilitas.....									3			
	Ethetas.....	5				6			1	17		8	
	Hæmorrhoea.....			3						4			
Miscellaneous .....	Hæmaturia.....	1		1		1				1			
	Morbificatio.....	1		1						1			
	Morbificatio oculi.....	3		16		12		8		3		6	
	Scorbutus.....												
	All other diseases.....	7		15		2		29		9	1	6	
	Total.....		154	1	205	2	231	4	218	4	263	4	115



## THE TROOPS AT POSTS IN THE NORTH INTERIOR.—EAST OF THE GREAT LAKES.

SECOND QUARTER.																				AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.		3,706.	
287.		87.		54.		81.		132.		134.		94.		39.		34.		44.			
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
1	2	2						7								2				43	
1						6		6		2										30	
1				1						4		5		6						27	
																		5		6	
1						1		1		3		1								10	
																					2
1										1										8	
																				17	
																				6	1
6		4		2		4		4		7		2				2		4		119	
	1																			25	
																				2	
								1												14	
														1						1	
	1															1				2	
2	1					5				3		2		5				7		53	
11	2			2		1		5		11		6		2		2				114	
2						3		1								1				14	
20	3					1		7		12		3		1		6		4		321	1
																				2	4
2																				25	
1				1		3	1			1				1				3		27	2
						1														6	
1																				7	
1																				11	2
										1										5	
1										2		1		1				5		16	
																				5	1
3						1		1												22	
																				1	
	1																			15	
1																				4	
2								1		1										9	
																				1	
1																				2	1
7	2			1		5		4		7		1						1		92	1
1																				2	
7	2							3		2		1				1		1		68	
1								1		1										35	
3																				14	
1	1			1				2		3		3								72	
										1										16	
						2														6	
	1									2		3								46	
4	2			2		2				1		1								71	
1	1									1		1								8	
	2					3						1								7	
																				3	
2																				5	
2	1			2				3		7		1								52	1
																				7	
																				4	
1	3																			7	
4	1																			53	
												1								1	
2	7			1		2		1								2		2		85	1
95	38			15		40	1	48		73		33		17		17		32		1,624	17

## REPORT ON THE SICKNESS AND MORTALITY

No. 4 —ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG

CLASSES OF DISEASES.	YEARS.....	THIRD QUARTER.											
		1839.		1840.		1841.		1842.		1843.		1844.	
		362.		555.		497.		452.		503.		324.	
SPECIFIC DISEASES.		Cases	Died.	Cases	Died.	Cases	Died.	Cases	Died.	Cases	Died.	Cases	Died.
Fevers .....	Febris continua communis .....	13		4		3		5					
	Febris intermittens quotidiana .....			1		1		10		2			
	Febris intermittens tertiana .....					4		13				2	
	Febris intermittens quartana .....											3	
	Febris remittens .....			2									
Eruptive fevers .....	Febris typhus .....												
	Erysipelas .....			1		1		1					
	Rubeola .....			2									
	Scarlatina .....												
	Varicella .....												
Diseases of the organs connected with the digestive system.	Varicella .....												
	Cholera Asiatica .....												
	Diarrhoea .....	16		53		52		28		23		12	
	Dysentery acuta .....	5		6		2		9		7		4	
	Dysentery chronica .....												
Diseases of the respiratory system.	Enteritis .....	8											
	Hepatitis acuta .....												
	Hepatitis chronica .....												
	Obstipatio .....	4		4		9		6		6		2	
	All other diseases of this system .....	9		30		29		16		12		14	
Diseases of the brain and nervous system.	Brucelitis, acuta et chronica .....	1				2		5		4		2	
	Catarhus .....	14		19		28	1	38		129		17	
	Phthisis pulmonalis .....											1	
	Pleuritis .....	3		5		3		5		4			
	Pneumonia .....	3		1		1		2		3		1	
Diseases of the urinary and genital organs.	All other diseases of this system .....			1		3							
	Cephalalgia .....							8				3	
	Delirium tremens .....			2		3		1				5	
	Epilepsia .....	2		1		5		3		2		1	
	Neuralgia .....					3							
Diseases of the serous and exhalant vessels.	All other diseases of this system .....	1				2		1		1			
	Gonorrhoea .....			7		1		1		1		2	
	Stricture urethrae .....												
	Syphilis primitiva .....	2		3		3		1				1	
	Syphilis consecutiva .....			3		1				1		1	
Diseases of the fibrous & muscular structures.	All other diseases of this class .....					2		2		2			
	Ascites .....												
	All other diseases of this class .....					4							
	Pernio .....												
	Podagra .....												
Abscesses and ulcers .....	Rheumatismus, acutus et chronicus .....	11		8		11		9		5		12	
	Fistula .....												
	Phlegmon et abscessus .....	4		4		18		12		7		12	
	Ulcus .....	3		13		4		3		4		2	
	Ambustio .....					2		1		4			
Wounds and injuries .....	Concussio cerebri .....			1									
	Contusio .....	2		17		22		8		10		6	
	Fractura .....			1				1					
	Luxatio .....			1						1		1	
	Sub luxatio .....	4				2		7				8	
Miscellaneous .....	Vulnus incisum .....	8		17		15		10		13		2	
	Vulnus laceratum .....									1		1	
	Vulnus punctum .....					1				1			
	Vulnus sclopeticum .....			1		1							
	Delirias .....					2						1	
Total .....	Ebrietas .....	3				2		2		18		11	
	Hæmorrhoids .....	1				3		3		1			
	Hernia .....			1				1					
	Morbi cutis .....	4		2		9				3			
	Morbi oculi .....	3		39				2		13		1	
Total .....	All other diseases .....	4		37		16		19	1	8		7	
	Total .....	128		290		250	1	233	1	285		135	



## THE TROOPS AT POSTS IN THE NORTH INTERIOR.—EAST OF THE GREAT LAKES.

THIRD QUARTER.																			AGGREGATE STRENGTH.		
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
135.		63.		70.		96.		83.		133.		86.		36.		34.		44.		3,473.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
2	4	3	1	1	4	1														41	
	5	4	5																	28	
2	7					9	7	1	1	7	5									58	
							1													3	
			1					1												4	
																				3	
																				2	
3	3	10	17	10	21	8	8	11	17											295	
		7	1	4	1	7	3	2	11											69	
																				8	
		1		2			1													4	
				1																2	
3	5	2	5	7	1	2	2	2	4											64	
10		9	10	15	6	3	4	4	9											180	
		1																		15	
		1	2	2	1	2	1	2												256	1
																				4	1
1						1														22	
1			4	2																18	
			1																	5	
3																				14	
																				11	
					1															15	
		1	3	2		2		2												18	
1																				6	
1		2	1		2															18	
1																				11	
			1																	7	
1			1		1			1												9	
																				4	
4		2	2	2	2															69	
7	4	1	2	3	1	5	3		3											86	
																				31	
																				7	
																				1	
5	1		1			3														75	
			1																	4	
																				3	
2	2		3	1		2														31	
1						3														69	
2			1	1	2	5														18	
																				5	
																				2	
		1	2			1														7	
4		3	2	3	1	2														51	
				2	1															11	
				2																4	
2																				20	
1						1														61	
3		1	7	4		1				1										109	1
60	32	48	74	73	54	49	23	35	1	62										1,852	3

## REPORT ON THE SICKNESS AND MORTALITY

No. 4.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG

CLASSES OF DISEASES.	YEARS .....	FOURTH QUARTER.									
		1839.	1840.	1841.	1842.	1843.	1844.				
	MEAN STRENGTH .....	440.	441.	469.	517.	334.	307.				
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers.....	Febris continua communis .....	7	7	5		1	1				
	Febris intermittens quotidiana .....		1	1	4	1	5				
	Febris intermittens tertiana .....		1	1	9						
	Febris intermittens quartana .....						1				
	Febris remittens .....										
	Febris typhus .....	1	1	1	1						
Eruptive fevers .....	Erysipelas .....				1	1					
	Rubeola .....										
	Scarlatina .....										
	Varicella .....										
	Variceloid .....										
Diseases of the organs connected with the digestive system.	Cholera Asiatica .....										
	Diarrhoea .....	8	22	25	31	7	2				
	Dysentery acuta .....		2	1	2						
	Dysentery chronica .....	1					1				
	Enteritis .....										
	Hepatitis acuta .....		1								
	Hepatitis chronica .....	1				1	2				
	Obstipatio .....	4	5	3	7	1					
	All other diseases of this system .....	5	16	13	20	10	9				
	Bronchitis, acuta et chronica .....		2	1	2	4	2				
Diseases of the respiratory system.	Catarrhus .....	18	40	63	68	28	21				
	Phthisis pulmonalis .....		1	2	1	1	1				
	Pleuritis .....	2	11		14	2	2				
	Pneumonia .....		5	2	2	3					
	All other diseases of this system .....	1									
	Cephalalgia .....				2						
	Delirium tremens .....	1	4	1			2				
Diseases of the brain and nervous system.	Epilepsia .....			2		1					
	Neuralgia .....				2		1				
	All other diseases of this system .....	4	2	1	1						
	Gonorrhoea .....		2	3	2		1				
Diseases of the urinary and genital organs.	Stricture urethrae .....			1							
	Syphilis primitiva .....	3	2	2			3				
	Syphilis consecutiva .....		1	2	1		1				
	All other diseases of this class .....			3	4	1	2				
Diseases of the serous and exhalant vessels.	Ascites .....										
	All other diseases of this class .....										
Diseases of the fibrous & muscular structures.	Pernio .....		1			1	3				
	Podagra .....										
	Rheumatismus, acutus et chronicus .....	6	4	12	12	11	3				
	Fistula .....										
Abscesses and ulcers.....	Phlegmon et abscessus .....	4	13	5	8	5					
	Ulcus .....	5	14	7	4	8	6				
	Amblyoma .....	1	1	4	3	2					
	Comensio cerebri .....			1	1						
	Contusio .....	13	26	20	21	8	4				
	Fractura .....	1	1	4	2		3				
Wounds and injuries.....	Luxatio .....			1							
	Sub luxatio .....			3	8	4	4				
	Vulnus incisum .....	7	5	17	9	11					
	Vulnus laceratum .....						1				
	Vulnus punctum .....				1	1					
	Vulnus sclopeticum .....	1				3					
	Debilitas .....			3	1						
	Ebrietas .....	4	1		2	12	6				
Miscellaneous .....	Hæmorrhoids .....		2	2	1		1				
	Hæma .....	1					1				
	Morbæ cutis .....		1	1	2	2					
	Morbæ oculi .....		5	8	10	5	5				
	All other diseases .....	5	12	17	22	8	2				
Total .....		104	220	239	282	140	96				



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## REPORT ON THE SICKNESS AND MORTALITY

No. 5. —ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	FIRST QUARTER.												
	YEARS.....	1839.		1840.		1841.		1842.		1843.		1844.	
	MEAN STRENGTH.....	795.		1,620.		1,158.		1,318.		1,245.		1,118.	
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fever.	Febris continua communis.....	4	.....	1	.....	17	1	1	.....	3	.....	5	.....
	Febris intermittens quotidiana.....	.....	.....	18	.....	11	.....	12	.....	6	.....	2	.....
	Febris intermittens tertiana.....	34	.....	26	.....	44	.....	28	.....	27	.....	2	.....
	Febris intermittens quartana.....	.....	.....	3	.....	2	.....	7	.....	.....	.....	.....	.....
	Febris remittens.....	4	.....	1	.....	.....	.....	4	.....	4	1	2	.....
	Febris typhus.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Eruptive fevers.....	Erysipelas.....	.....	.....	12	1	1	.....	1	.....	.....	.....	1	.....
	Rubeola.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
	Scarlatina.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	.....
	Varicella.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Varicella.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Diseases of the organs connected with the digestive system.	Diarrhoea.....	26	.....	83	2	42	.....	36	.....	15	.....	8	.....
	Dysentery acuta.....	3	.....	9	.....	1	.....	3	.....	2	.....	1	.....
	Dysentery chronica.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	1	.....
	Enteritis.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
	Hepatitis acuta.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Hepatitis chronica.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	1	.....
Diseases of the respiratory system.	Obstipatio.....	6	.....	14	.....	7	.....	8	.....	10	.....	5	.....
	All other diseases of this system.....	29	.....	44	1	40	.....	16	.....	14	.....	28	.....
	Bronchitis acuta et chronica.....	.....	1	1	.....	3	.....	3	.....	8	.....	4	.....
	Catarrhus.....	92	.....	155	.....	111	.....	108	.....	120	.....	144	.....
	Phthisis pulmonalis.....	3	1	3	3	2	4	1	.....	1	2	1	.....
	Phonitis.....	4	.....	8	.....	12	.....	14	1	8	.....	16	.....
Diseases of the brain and nervous system.	Pneumonia.....	3	.....	17	1	5	.....	6	.....	1	.....	14	1
	All other diseases of this system.....	.....	.....	.....	.....	3	.....	3	1	.....	.....	3	.....
	Cephalalgia.....	.....	.....	3	.....	5	.....	9	.....	5	.....	1	.....
	Delirium tremens.....	.....	.....	6	1	5	.....	5	1	12	.....	1	.....
	Epilepsia.....	3	.....	6	.....	2	.....	1	.....	6	.....	2	.....
	Neuralgia.....	.....	.....	1	.....	2	.....	4	.....	6	.....	2	.....
Diseases of the urinary and genital organs.	All other diseases of this system.....	.....	.....	2	.....	.....	.....	.....	.....	1	.....	3	.....
	Gonorrhoea.....	15	.....	36	.....	40	.....	23	.....	29	.....	19	.....
	Stricture urethrae.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
	Syphilis primitiva.....	18	.....	27	.....	9	.....	8	.....	9	.....	15	.....
	Syphilis consecutiva.....	.....	.....	6	1	4	.....	2	.....	1	.....	2	.....
Diseases of the serous and exhalant vessels.	All other diseases of this class.....	6	.....	.....	.....	1	.....	7	.....	9	.....	2	.....
	Acytes.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Diseases of the fibrous & muscular structures.	All other diseases of this class.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Perno.....	13	.....	22	.....	9	.....	2	.....	4	.....	.....	.....
	Podagra.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....
	Rheumatismus, acutus et chronicus.....	32	.....	50	.....	38	.....	26	.....	20	.....	25	.....
Abscesses and ulcers....	Pistula.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Phlegmon et abscessus.....	17	.....	16	.....	11	.....	13	.....	15	.....	7	.....
	Ulcus.....	10	.....	23	.....	11	.....	7	.....	25	.....	15	.....
	Ambustio.....	4	.....	10	.....	11	.....	2	.....	5	.....	3	.....
	Amputatio.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....
Wounds and injuries....	Concussio cerebri.....	.....	.....	3	.....	.....	.....	.....	.....	1	.....	.....	.....
	Contusio.....	23	.....	55	1	43	.....	34	.....	29	.....	28	.....
	Fractura.....	5	.....	5	1	3	.....	2	.....	1	.....	4	.....
	Luxatio.....	2	.....	3	.....	.....	.....	3	.....	3	.....	2	.....
	Punctio.....	.....	.....	1	.....	1	.....	2	.....	1	.....	.....	.....
	Sub luxatio.....	17	.....	5	.....	8	.....	6	.....	13	.....	15	.....
Miscellaneous.....	Vulnus incisum.....	17	.....	32	.....	19	.....	19	.....	12	.....	11	.....
	Vulnus laceratum.....	.....	.....	.....	.....	2	.....	.....	.....	2	.....	9	.....
	Vulnus punctum.....	.....	.....	.....	.....	.....	.....	3	.....	2	.....	5	.....
	Vulnus sclopetarium.....	.....	.....	.....	.....	3	.....	.....	.....	2	.....	.....	.....
	Emetias.....	13	.....	20	3	4	.....	4	.....	9	.....	21	.....
	Hæmorrhoids.....	5	.....	1	.....	1	.....	2	.....	3	.....	2	.....
	Hæma.....	3	.....	2	.....	.....	.....	1	.....	2	.....	.....	.....
	Morbi cutis.....	12	.....	.....	.....	5	.....	9	.....	4	.....	2	.....
	Morbi oculi.....	5	.....	19	.....	6	.....	15	.....	13	.....	14	.....
	All other diseases.....	33	.....	105	.....	38	.....	63	.....	32	.....	34	1
Total.....		462	2	873	16	584	5	529	3	499	3	495	2



## AMONG THE TROOPS AT POSTS IN THE REGION OF THE GREAT LAKES.

FIRST QUARTER.														AGGREGATE STRENGTH.							
1845.	1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.				
1,042	509.		87.		16.		492.		495.		418.		353.		180.		153.		10,999.		
Cases. Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
.....	5	.....	.....	.....	.....	3	.....	.....	.....	2	.....	.....	.....	3	.....	1	.....	45	1		
3	1	.....	1	.....	2	.....	4	.....	.....	4	.....	1	.....	3	.....	2	.....	70	.....		
5	3	.....	.....	.....	2	.....	6	.....	5	.....	.....	2	.....	2	.....	2	.....	188	.....		
.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	15	.....		
2	1	.....	.....	.....	.....	3	.....	9	.....	2	.....	4	.....	.....	.....	1	.....	26	2		
.....	.....	3	.....	2	1	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	8	.....		
2	1	1	.....	.....	.....	1	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	21	2		
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....		
24	.....	.....	.....	.....	.....	5	2	.....	.....	.....	.....	.....	.....	4	.....	.....	.....	36	.....		
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	.....	.....	9	2		
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....		
11	8	.....	3	.....	.....	25	1	25	1	12	.....	7	.....	2	.....	1	.....	304	4		
3	1	.....	.....	.....	.....	4	.....	.....	1	.....	2	.....	.....	.....	.....	.....	.....	30	.....		
1	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	7	.....		
13	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15	1		
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....		
1	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	.....		
4	5	.....	.....	.....	.....	8	.....	5	.....	6	.....	2	.....	8	.....	2	.....	90	.....		
16	6	.....	2	.....	2	.....	21	.....	16	.....	9	.....	3	.....	4	.....	7	257	1		
3	4	.....	1	.....	.....	3	.....	1	.....	6	.....	2	.....	.....	.....	.....	.....	39	1		
104	25	.....	1	.....	4	.....	28	.....	35	.....	28	.....	22	.....	27	.....	9	1,013	.....		
1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	2	1	.....	.....	.....	.....	14	12		
7	2	.....	.....	.....	.....	4	.....	.....	.....	3	.....	.....	1	.....	.....	4	.....	83	1		
9	4	1	1	.....	1	.....	6	.....	10	.....	8	.....	2	.....	2	1	.....	89	4		
1	.....	.....	1	.....	.....	.....	1	.....	1	.....	3	.....	.....	.....	.....	1	.....	16	1		
10	2	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	4	.....	5	.....	48	.....		
1	2	.....	.....	.....	.....	7	1	5	.....	3	.....	1	.....	3	.....	1	.....	52	3		
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	3	.....	.....	.....	1	.....	25	.....		
6	1	.....	.....	.....	.....	2	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	25	.....		
2	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	10	.....		
14	1	.....	2	.....	.....	2	.....	2	.....	3	.....	3	.....	.....	.....	2	.....	211	.....		
1	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	5	.....		
2	4	.....	.....	.....	.....	2	.....	7	.....	1	.....	1	.....	.....	.....	.....	.....	103	.....		
1	.....	.....	.....	.....	.....	1	.....	.....	.....	2	.....	2	.....	1	.....	3	.....	26	1		
3	2	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	33	.....		
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....		
1	.....	.....	1	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	2	.....	55	.....		
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....		
21	11	.....	1	.....	.....	22	.....	9	.....	7	.....	10	.....	13	.....	8	.....	293	.....		
.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	2	.....		
12	4	.....	1	.....	.....	18	.....	31	.....	17	.....	9	.....	7	.....	6	.....	184	.....		
5	1	.....	1	.....	.....	13	.....	13	.....	13	.....	12	.....	2	.....	3	.....	104	.....		
3	1	.....	.....	.....	.....	2	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	46	.....		
.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....		
.....	1	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	7	1		
20	12	.....	.....	.....	.....	18	.....	21	.....	16	.....	9	.....	3	.....	13	.....	218	1		
.....	2	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	24	1		
1	1	.....	1	.....	.....	2	.....	1	.....	3	.....	.....	.....	.....	.....	.....	.....	22	.....		
.....	.....	.....	.....	.....	.....	5	.....	3	.....	1	.....	.....	.....	.....	.....	.....	.....	14	.....		
3	2	.....	.....	.....	.....	3	.....	3	.....	6	.....	3	.....	1	.....	.....	.....	80	.....		
22	7	.....	1	.....	.....	8	.....	13	.....	7	.....	7	.....	1	.....	2	.....	178	.....		
3	5	.....	.....	.....	.....	3	.....	3	.....	3	.....	1	.....	2	.....	5	.....	16	.....		
.....	.....	.....	.....	.....	.....	4	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	17	.....		
2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	.....		
11	4	.....	1	.....	.....	11	.....	2	.....	3	.....	3	.....	1	.....	1	.....	114	3		
2	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	18	.....		
1	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	12	.....		
.....	2	.....	.....	.....	.....	2	.....	1	.....	.....	.....	1	.....	3	.....	2	.....	43	.....		
7	1	.....	1	.....	1	.....	4	.....	6	.....	3	.....	2	.....	.....	1	.....	98	.....		
41	1	19	.....	9	.....	25	.....	11	.....	6	.....	5	.....	9	.....	12	.....	444	2		
405	2	154	2	34	.....	14	.....	286	6	249	1	176	.....	128	1	119	1	100	.....	3,167	44

## REPORT ON THE SICKNESS AND MORTALITY

No. 5 ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

		SECOND QUARTER.											
CLASSES OF DISEASES.		YEARS.....		1839.	1840.	1841.	1842.	1843.	1844.				
		MEAN STRENGTH.....		1,377.	1,460.	1,139.	1,064.	1,178.	1,100.				
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers.....	Febri continua communis.....	6	11	19	9	7	3						
	Febri intermittens quotidiana.....	103	3	79	55	76	11	14					
	Febri intermittens tertiana.....	20	76	158	122	38	24						
	Febri intermittens quartana.....		12		5								
	Febri remittens.....	10		8	12	2	6						
	Febri typhus.....		4	1									
Eruptive fevers.....	Erysipelas.....	3	7	4		2							
	Rubella.....		18	1		3							
	Scarlatina.....												
	Varicella.....			1									
	Varicella.....					5							
	Cholera Asiatica.....												
Diseases of the organs connected with the digestive system.	Dysentery.....	183	94	53	1	68	1	30	27				
	Dysentery acuta.....	5	6	1	2	6	10	2					
	Dysentery chronica.....												
	Enteritis.....	1											
	Hepatitis acuta.....	3											
	Hepatitis chronica.....			2			1	1					
Diseases of the respiratory system.	Obstruction.....	10	14	10	19	10	9						
	All other diseases of this system.....	17	73	1	42	26	33	12					
	Bronchitis, acuta et chronica.....	2	3	1	2		4	5					
	Croup.....	85	166	73	113	287	1	94					
	Phthisis pulmonalis.....	1	1	4	3	2	2						
	Pleuritis.....	6	11	10	14	6	6						
Diseases of the brain and nervous system.	Pneumonia.....	1	2	1	7	2	6	1	2				
	All other diseases of this system.....	2	1		9		1	1					
	Cephalalgia.....	5	15	8	9	7	10						
	Delirium tremens.....		4	8	10	1	4	5					
	Epilepsia.....	3	5	6	3	6							
	Neuralgia.....		10	2		1	4						
Diseases of the urinary and genital organs.	All other diseases of this system.....		4		2	2							
	Gonorrhoea.....	12	41	17	42	15	8						
	Stricture urethrae.....		1	2		1	1						
	Syphilis primitiva.....	16	19	6	10	8	13						
	Syphilis consecutiva.....	1	7	4	2	1	2						
	All other diseases of this class.....	1	10	11	8	6	5						
Diseases of the serous and exhalant vessels.	Ascitis.....			1									
	All other diseases of this class.....		2		1								
Diseases of the fibrous & muscular structures.	Pemphigus.....			1	1								
	Podagra.....		1	2									
	Rheumatismus, acutus et chronicus.....	34	59	1	47	31	31	24					
	Fistula.....	3	3										
	Phlegmon et abscessus.....	23	18	21	15	17	14						
	Ulcus.....	3	11	21	15	22	8						
Abscesses and ulcers.....	Andalut.....		3	5	6	5	4						
	Contraheo carteri.....		2			1							
	Contraheo carteri.....	10	39	43	34	18	28						
	Fractura.....	3	2		1		1						
	Luxatio.....	1	1	1									
	Stranguria.....	21	15	7	13	10	10						
Wounds and injuries.....	Vulnus incisa.....	34	11	23	16	15	14						
	Vulnus laceratum.....					5	4						
	Vulnus punctum.....				3	3	4						
	Vulnus scopulorum.....		3	1	4								
	Debilitas.....		2		5	2	1						
	Ebrietas.....	16	11	1	1	2	5	15					
Miscellaneous.....	Hemiplegia.....	2	6	7	4	4	2						
	Hemiplegia.....			1	3	1	1						
	Morbus.....	21	12	39	1		1						
	Morbus.....	15	41	7	29	20	5						
	All other diseases.....	14	22	60	163	50	201						
Total.....		524	4	1,019	7	804	7	876	5	707	1	426	1



AMONG THE TROOPS IN THE NORTHERN DIVISION.

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AMONG THE TROOPS AT POSTS IN THE REGION OF THE GREAT LAKES.

SECOND QUARTER.																				AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.		10,949.	
1,052.		529.		93.		15.		508.		455.		404.		244.		175.		156.			
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
11	7		2		1		1		8		1					1				86	1
19	1				2		10		3		3		2			10				390	3
31	11		9		2		14		17		16					2		1		541	
	1						1				7		2							26	
6					1		8		11		8					1		2		75	
							1													5	1
							3	1	3		1									23	1
10	1		1																	34	
4																				4	
																				1	
																				5	
																		1	1	1	1
30	17		4				30	1	19		23		9			5		2		594	3
1	1						1		5		3		3							45	1
							1	1	2				1							4	1
2			1				1									2				7	
																				3	
	1																			5	
9	9						11				12		5			14		5		137	
25	17		4		1		25		15		8		3			10		3		314	1
3	2		11				1		6		6		1			1				48	
142	20		2				20		21		19		3			6		10		1,061	1
	1						1	1												9	8
12	1		2				4		5		1		3			1		1		83	
4					1		2		4		3		1			1		1		35	4
3							1		2		1							1		21	1
13	3		1				4		5							3		3		86	
1	3		1				9		2		3	1						3		53	2
8	1						1											1		34	
1	3						3		1							4				29	
1							3									3		1		16	
9	8		1				5		6							2		2		168	
2									1											8	
2	2						3						2					2		83	
6	2						2		2		1		1			3				34	
	2						3		3	1	3							1		53	1
							1													2	
																				3	
																				3	
																				3	
29	7		4				13		9		10		3			10		5		399	1
																2				8	
11	6						20		20		16		3			1		6		197	
16	1						18		8		11		6			2		6		148	
4	2								1											30	
							1											1		5	
25	12		6				14		12		14		5			9		8		277	
	1						1		1		2		3							18	
	1						3		1		1	1								10	1
7	8						5		4		2					1		4		167	
11	4		3				15		7		3		1			5		1		163	
3	1								1		1		1			2		1		19	
3	1								1		2		1							18	
1									1											9	1
3							1													14	
13	2						12		3				2			5		3		90	1
5	1		2				4		3		1							1		42	
3	3						1				1					1		1		16	
2							4		3		2							3		91	
13	1						10		8		7		1			2				169	
15	52		3				12		8		9		8			18		15		543	
559	217		57		8		304	4	232	2	200	2	68			160		95	1	6,496	34

## REPORT ON THE SICKNESS AND MORTALITY

No. 5 — ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	THIRD QUARTER.												
	YEARS.....	1839.		1840.		1841.		1842.		1843.		1844.	
	MEAN STRENGTH.....	1,425.		1,307.		865.		1,358.		1,112.		980.	
SPECIFIC DISEASES.		Cases.		Died.		Cases.		Died.		Cases.		Died.	
Fevers.....	Fever continued continued.....			5		2		10	1	5		7	
	Fever intermittens quotidiana.....	128		52		47		125		29		23	
	Fever intermittens tertiana.....			93		90		116		31		20	
	Fever intermittens quotidiana.....							15					
	Fever remittens.....	194	7	45		41	1	13		14		8	
Eruptive fevers.....	Febus typhus.....			11									
	Erysipelas.....			2		1				2			
	Rubella.....			3									
	Scarlatina.....												
	Varicellula.....							3					
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....												
	Diarrhoea.....	240		129		109		110		76		86	
	Dysentery tota.....	2		29	1	17		15		12		6	
	Dysentery chronica.....	4											
	Enteritis.....												
Diseases of the respiratory system.	Hepatitis acuta.....	1						3				2	
	Hepatitis chronica.....											1	
	Obstipatio.....	18		24		20		21		9		11	
	All other diseases of this system.....	21	1	54		19		25		32		38	
	Bronchitis, acuta et chronica.....	2		1		5		7		2		3	
Diseases of the brain and nervous system.	Cutarrhus.....	67		50		16		141		236		69	
	Phthisis pulmonalis.....	1		4	3	4	1	1		2		1	
	Pleuritis.....	3		17		2		7		3			
	Pneumonia.....	1		3		2		5		1			
	All other diseases of this system.....							1					
Diseases of the urinary and genital organs.	Cephalalgia.....	1		5		3		6		4		5	
	Duchenn tremens.....			9		7		5		2		2	
	Epilepsia.....	1		2		5		3		4			
	Neuralgia.....			3		1				2		2	
	All other diseases of this system.....			2		4				3		3	
Diseases of the serous and exhalant vessels.	Gonorrhoea.....	9		34		25		22		11		19	
	Stricture urethrae.....			2									
	Syphilis primitiva.....	6		16		11		7		8		14	
	Syphilis consecutiva.....			1	1	3				3		2	
	All other diseases of this class.....	1		3		6		3		7	1	2	
Diseases of the fibrous & muscular structures.	Ascites.....								1				
	All other diseases of this class.....			1									
	Podagra.....					1							
	Rheumatismus, acutus et chronicus.....	28		33		30		38		22		38	
	Fractura.....			1									
Abscesses and ulcers.....	Phlegmon et abscessus.....	12		14		23		21		18		9	
	Ulcus.....	2		17		9		30		19		9	
	Amblyopia.....			5		4		3		1		2	
	Ampetatio.....			1		1						1	
	Concussio cerebri.....									1	1		
Wounds and injuries.....	Contusio.....	6		31		38		54		33		25	
	Fractura.....	3		1		1		1		1			
	Luxatio.....	1		1				2					
	Punctura.....			10		2							
	Subluxatio.....	17		23		3		11		6		26	
Miscellaneous.....	Vulnus incisum.....	45		22		23		14		17		15	
	Vulnus laceratum.....									3		4	
	Vulnus punctum.....					7		4		2		1	
	Vulnus sclopetarium.....			3								6	
	Debilitas.....	6		3		5		2				1	
Miscellaneous.....	Ebrietas.....			3		3		5		8		17	
	Hæmorrhoides.....	3		4		4		3		8		9	
	Hæmorrhia.....	2		4		1		3		1		3	
	Morbentia.....	16		7		1		3		1			
	Morbentia.....	13		29		16		17		1		9	
Total.....		833	9	907	5	663	2	958	2	672	2	538	1



## AMONG THE TROOPS AT POSTS IN THE REGION OF THE GREAT LAKES.

THIRD QUARTER.																		AGGREGATE STRENGTH.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.										
717.	83.	16.	14.	484.	422.	362.	187.	191.	156.									9,681.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
3	2	2		1	9			2										48	1
6	1		7	10	20		14	6	1									469	
15	6	6		6		15	1	1	1									404	
	3			3	2			5										28	
5			3	5	13	5	12	9										292	8
	1			1														13	
					2			1										8	
																		5	
					1													1	
																		8	
					5													12	5
					10	4								2	1			12	5
36	10			73	50	34	14	18	32									1,047	
9				7	7	1	7		3									116	2
1																		5	
					4			1										5	
					1													7	
																		1	
7	2			7	6	11	2	8	4									150	
26	8			22	15	16	3	7	3									309	1
2					2													24	
31				10	7	7	5	8	9									679	
1					1													13	6
2	1			3	1			2										42	
2				2	1	1		3										21	
2	1			3	1				2	1								10	1
8	3			5	1			13	4									58	
1				5	3	1	7		3									45	
																		16	
					1													8	
1				1	1				1									16	
8				12	4	3		1	1									151	
																		2	
8				9	4	1	1	4										89	
				1	1			1										12	1
3				2			1		2									30	1
				1														1	1
																		1	
20	1			10	8	8	12	5	2									255	
				2				1										4	
7	2			22	16	1	13	7	11	7								183	1
2	1			8	5	7	12	1	2									124	
				1	2			1										19	
						3												6	
1																		2	1
21	5			20	15	11	7	11	8									285	
1				1		1												10	
1				1	3													9	
																		12	
					8	2	4	3	1	3								115	
13				6	13	6	2	1	1									178	
2				4			4	2	1									20	
				2	1	1												18	
																		9	
2				7					2									28	
8	2			15	1	3	5	7	3									80	
1				1	2	1	1	1										38	
						1												16	
				2	2		2		2					2				66	
2	3			1	7	1	1	7	3									104	
34	1	5		27	12	10	25	15	10									437	2
304	1	57	8	10	318	5	245	2	185	135	154	108	2					6,125	51

## REPORT ON THE SICKNESS AND MORTALITY

No. 5. ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

		FOURTH QUARTER.											
CLASSES OF DISEASES.		YEARS.....	1839.	1840.	1841.	1842.	1843.	1844.					
		MEAN STRENGTH.....	1,492.	1,436.	1,073.	1,092	1,109.	1,080.					
		SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	
Fever.....	Febris continua communis.....	7	5	10	1	6	3						
	Febris intermittens quotidiana.....	17	28	29	50	7	8						
	Febris intermittens tertiana.....	71	125	33	59	10	7						
	Febris intermittens quartana.....		1	12		1							
	Febris remittens.....	76	4	17	4		2						
	Febris typhus.....	1	1	3	1		1						
Eruptive fevers.....	Erysipelas.....	1	1	1	1		1						
	Scarlatina.....	5			1	1							
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....												
	Diarrhoea.....	223	41	66	18	16	28						
	Dysentery acuta.....	17	6	21	4	2	3						
	Dysentery chronica.....			3	2		1						
	Euteritis.....		1				1	2					
	Hepatitis chronica.....												
	Gastritis.....	19	13	24	12	3	3						
	All other diseases of this system.....	96	1	52	2	25	1	14	26	17			
Diseases of the respiratory system.	Bronchitis acuta et chronica.....	10	2	5	2	3	2						
	Catarrhus.....	214	106	111	106	80	72						
	Phthisis pulmonalis.....	3	3	1	1	3	1	1	0				
	Pleuritis.....	11	5	11	7	1	3	8					
	Pneumonia.....	6	3	3	1		3	2					
	All other diseases of this system.....	3	3	4	2	1	1						
Diseases of the brain and nervous system.	Cephalalgia.....	9	6	5	5	1	4						
	Delirium tremens.....	11	6	13	1	11	1	1					
	Epilepsia.....	3	3	4	5	1	2						
	Neuralgia.....	4	1	2			1						
	All other diseases of this system.....	1	1	1	8		1	2					
	Gonorrhoea.....	18	37	22	19	19	10						
Diseases of the urinary and genital organs.	Stricture urethrae.....		2				3						
	Syphilis primitiva.....	40	7	8	8	10	6						
	Syphilis consecutiva.....	5		6	2		4						
	All other diseases of this class.....	1	9	5	5	7	2						
Diseases of the serous and exhalant vessels.	Ascites.....			1									
	All other diseases of this class.....	1	1	1									
Diseases of the fibrous & muscular structures.	Periton.....	4	3	1	2								
	Podagra.....			1									
	Rheumatismus, acutus et chronicus.....	48	35	21	30	22	26						
	Pistula.....	1	1	2									
Abscesses and ulcers.....	Phlegmon et abscessus.....	18	11	23	13	6	17						
	Ulcus.....	20	35	14	29	12	11						
	Ambustio.....	1	2	6	5	3	2						
	Amputatio.....	1											
	Concussio cerebri.....	1											
	Contusio.....	50	25	38	27	17	20						
Wounds and injuries.....	Fractura.....	4	1	2	3	1	1						
	Luxatio.....	2											
	Pinatio.....	5	4										
	Sub luxatio.....	1	7	11	11	7	11						
	Vulnus incisum.....	47	27	10	21	9	10						
	Vulnus laceratum.....					2	2						
	Vulnus punctum.....				2	2							
	Vulnus sclopeticum.....		2		1								
	Debilitas.....	1	1		1		2						
	Ebrietas.....	15	8	4	11	9	7						
	Hæmorrhoids.....	7	2	4	1	3	2						
	Hæma.....	3		6		1	2						
Miscellaneous.....	Morbidi.....	5	7	2		1	2						
	Morbidi oculi.....	21	11	11	21	3	14						
	All other diseases.....	68	41	59	42	31	37						
	Total.....	1,229	11	720	5	648	6	559	3	338	1	359	



## AMONG THE TROOPS AT POSTS IN THE REGION OF THE GREAT LAKES.

FOURTH QUARTER.																			AGGREGATE STRENGTH.		
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
482.		85.		16.		403.		505.		416.		354.		186.		161.		153.		9,735.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
4	1					2		3		3				1		3		5		57	
3	1					14		6		6		5		3		1				169	
2	1			3		7		12		2		10		1		2				347	
						1				1										16	
						3		12		7				1				1		123	4
1																				7	1
								1		1		1		1						8	1
																				7	
						1														1	
						3								3						6	
15	3					70	5	37		13	1	17		4		7		10		551	6
1						18		6		2		2		1		1				84	
						1										1				8	
																				3	1
1																		2		3	
5	1					1		5		5		5		2		6		2		106	
9	2					11		11		6		6		5		7		7		294	4
	1					6				1				2		1				35	
12						13		15		21		27		34		9		4		224	
1																				11	7
2						2		3		2						1				55	1
3	3					2		3		1		11								40	1
										2	1									16	1
2																2		6		40	
	1	1						6	1	8		1		3						65	4
								1		3		2								21	
1						2						2		1				1		15	
8								1								1				26	1
	2					2		10		1		2				1				173	
																				5	
3						1		4								5				92	
						2		2		1						2				24	
						2		2		2		3		1				1		40	
						1														1	
																1				4	
1						5		1		2		2				1				22	
																				1	
9	2		1			13		20		9		7		11		4		2		266	
																				4	
11						9		19		11		6		9		10		6		169	
2	1					7		13		6		10				2		2		161	
1	1					1		1				1								21	
												1								2	
																1				2	
9	2		1			3		10		10		16		11		7		6		222	
3																		1		14	2
	1					1				1										6	
								1				1						1		12	
2								10				3				1		1		65	
5			1			6		5		13		5		1		1		2		163	
						2		2				1						1		10	
4								1										1		10	
																				3	
																1				6	
								3		6		6		3		2				74	
						1				1		3		1				2		27	
	1							1				1				3				18	
								1				2		1				2		23	
5	1							9		1		1		3		1		8		113	
7	7					6		16	2	15		5		13		15		24		389	3
132	32	1	6			218	5	253	3	163	2	165		119		100		98		5,139	37

## REPORT ON THE SICKNESS AND MORTALITY

No. 6 ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG THE

CLASSES OF DISEASES		FIRST QUARTER.															
		YEARS.....		1839.		1840.		1841.		1842.		1843.		1844.			
		MEAN STRENGTH.....		363.		633.		652.		473.		632.		574.			
SPECIFIC DISEASES.		Cases.		Died.		Cases.		Died.		Cases.		Died.		Cases.		Died.	
Fever.....	Febris continua communis.....			12		1		9		3		1					
	Febris intermittens quotidiana.....	5		2		24		15		1		5					
	Febris intermittens tertiana.....			1		24		32		3		20					
	Febris intermittens quartana.....																
	Febris remittens.....	1		3								3					
Eruptive fevers.....	Febris typhus.....																
	Erysipelas.....			1		3											
	Scarlatina.....											1					
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....																
	Diarrhoea.....	1		4		3		2		24		6					
	Dysentery acuta.....	3								2		2					
	Dysentery chronica.....			3	1												
	Enteritis.....																
	Hepatitis acuta.....					1											
	Hepatitis chronica.....			1				3				2					
Diseases of the respiratory system.	Ob-spiration.....	1		3		8		2		2							
	All other diseases of this system.....	2		26		22		7		11		7					
	Bronchitis, acuta et chronica.....	1				1		1			1						
	Catarrhus.....	18		43		25		64		88		39					
	Phthisis pulmonalis.....			3	1	2	1		1	1	1						
	Pleuritis.....	3		7		4		1		1		2					
	Pneumonia.....			1		2		4		3	1	1					
Diseases of the brain and nervous system.	All other diseases of this system.....							1		2							
	Cephalalgia.....			1		4		1		7		1					
	Chorea tremens.....			1		5		4				2					
	Epilepsia.....			3		1		2		1							
	Neuralgia.....			1		2				2		1					
	All other diseases of this system.....	2		1		1	1					1					
	Gonorrhoea.....	3		1		9		8		5		6					
Diseases of the urinary and genital organs.	Structura urethrae.....																
	Syphilis primitiva.....							1									
	Syphilis consecutiva.....			1						1							
Diseases of the serous and exhalant vessels.	All other diseases of this class.....							1		1		2					
	Aneurysm.....																
Diseases of the fibrous & muscular structures.	Pericardium.....	9		6		21		13		23		9					
	Pericardium.....																
	Rheumatismus, acutus et chronicus.....	6		19		41		13		25		10					
Abscesses and ulcers.....	Fistula.....	1															
	Phlegmon et abscessus.....	5		17		9		16		13		15					
	Furunculi.....			4		5		3		1		3					
	Amputation.....	2				5		1		1		1					
	Amputation.....					1											
Wounds and injuries.....	Contusio cerebri.....											1					
	Contusio.....			6		24		12		14		12					
	Fractura.....	1		2		5				1		2					
	Luxatio.....			5								1					
	Punctio.....					3		4									
	Sub-luxatio.....	3		3		17		2		6		2					
	Vulnus incisum.....	8		20		37		5		11		11					
	Vulnus laceratum.....	3		3		5											
	Vulnus punctum.....	3		1						1		1					
	Vulnus sclopetarium.....					1		1		1							
	Debilitas.....											1					
	Ebrietas.....	5								4		4					
Miscellaneous.....	Hæmorrhoea.....	1		1		2		3		5		2					
	Hernia.....			2													
	Morbificus.....			2		1		2				4					
	Morbificus.....	3		2		3		6		3		5					
	Scorbutus.....																
	All other diseases.....	1		11		15		8		19		15					
Total.....		94		223	2	341	2	217	1	284	3	201					



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## REPORT ON THE SICKNESS AND MORTALITY

No. 6. ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG THE

CLASSES OF DISEASES.		SECOND QUARTER.												
		YEARS.....		1839.	1840.	1841.	1842.	1843.	1844.					
		MEAN SEQUENCE.....		125.	637.	474.	683.	555.	680.					
SPECIFIC DISEASES.		Cases	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	
Fever.	Febus continua communis.....	3		1			2		1			1		
	Febus intermittens quotidiana.....	35				4	17		9			41		
	Febus intermittens tertiana.....			53		63	33		4			68		
	Febus intermittens quartana.....					1	1							
	Febus remittens.....	3		10		2	13		2			2		
	Febus typhus.....	1	1											
Eruptive fevers.....	Erysipelas.....	3				1	1	1						
	Rubeola.....													
Diseases of the organs connected with the digestive system.	Varicella.....													
	Cholera Asiatica.....													
	Diarrhoea.....	12		42		11	74		15			13		
	Dysentery acute.....	3		20	1		5		3			2		
	Dysentery chronic.....													
	Enteritis.....													
	Hepatitis acute.....	2		1					1					
	Hepatitis chronic.....				1		2					1		
	Obstipatio.....			16		8	4		9					
	All other diseases of this system.....	7		26		17	12		19			6		
Diseases of the respiratory system.	Bronchitis, acute et chronic.....			3					1			1	1	
	Catarrhus.....	8		37		11	100		53			21		
	Phthisis pulmonalis.....			2	1		1	2					1	
	Pleuritis.....			6		2	1		4			2		
	Pneumonia.....			3		3	11		1			1		
	All other diseases of this system.....			3		1	4					1		
	Cephalalgia.....			3		8	8		7			4		
	Delirium tremens.....			5		7	1					3		
	Epilepsia.....			1		3	1					1		
	Neuralgia.....						2		2			1		
Diseases of the brain and nervous system.	All other diseases of this system.....	2		3		1	1				2	1		
	Gonorrhoea.....	1		4		12	15		3			9		
	Stricture urethrae.....													
	Syphilis primitiva.....			1		1						1		
	Syphilis consecutiva.....			1										
	All other diseases of this class.....	2		3		1	4		1			6		
	Ascites.....													
	All other diseases of this class.....						2							
	Diseases of the fibrous & muscular structures.	Permo.....	2											
		Podagra.....												
Rheumatismus, acutus et chronicus.....		12		29		27	28		14			12		
Fistula.....		1												
Abscesses and ulcers.....	Phlegmon et abscessu.....	3		19		8	16		16			9		
	Ulcus.....	2		11		3	3		2			4		
	Amputio.....	2		1		1	1		2			2		
	Amputatio.....			1										
	Contusio.....	15		33		10	19		16			12		
	Fractura.....	1				1	2					2		
	Luxatio.....	4		6		1								
	Paratio.....			7		1	1							
	Subluxatio.....	3		3		9	7		6			4		
	Vulnus incisum.....	12		21		6	13		8			8		
Wounds and injuries.....	Vulnus laceratum.....													
	Vulnus punctum.....					2	2		1			2		
	Vulnus sclopetarium.....	1		1		11	2	1	1			2		
	Debilitas.....	2					2							
	Ebrietas.....	11		3			4					10		
	Hæmorrhoids.....	1		1		1	2		1			2		
	Hæma.....			3								1		
	Morbidi cutis.....	1		7		1	2		1			3		
	Morbidi oculi.....	5		2		12	21		22			2		
	Miscellaneous.....	Scorbutus.....												
All other diseases.....		14	1	18		21	26		30			20		
Total.....		174	2	410	3	272	466	4	255			282	3	



## TROOPS AT POSTS IN THE NORTH INTERIOR REGION.—WEST OF THE GREAT LAKES.

SECOND QUARTER.																				AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
520.		191.		153.		85.		422.		466.		595.		370.		311.		403.		6,970.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
3				4				5								2				22	
5		9		24		2		4		8		8		11		19		5		291	
18		16		22		10		19		4		25		3		5		4		317	
														5						7	
1		1								1						2		2		39	
								2								2		1		6	1
1				1				1												8	1
		2																		2	
										1										1	
								2	1	1		1		3						7	1
13		10		5				23		63		42		21		15		10		369	
3		2						1		9		9		3						60	1
										1										1	
																		1		1	
				3				1												8	
1										1										5	1
3		2		1		2		5		14		12		7		4		15		102	
10		6		3				5		26		16		8		13		4		178	
				6				3		5						1				20	1
32		4		9		6		24		49		74		19		5		23		475	
1				1				1						3	1					9	5
3				9	2			4		4		9		3						17	2
1				1				1		4		5		1				1		33	
1												1								11	
5		2		2		1				1		2		4				4		51	
				1	1			4	1	1		1		3		1				27	2
								1						1						8	
1				1						1								2		10	
												2								11	1
7		1		9				5		1		1		1		2				71	
1		1								1		1		2						9	
										1				1						3	
9		2								1		1								30	
1								1	1					1						5	1
								2				1								5	
												1								1	
10		8		7		5		27		38		42		19		4		9		291	
		1																		2	
6		3		1				22		14		24		23		12		6		182	
3		3		2		1		1		2		12		8				17		74	
1				1				1								1		1		11	
								1												2	
15		9				5		28		16		21		13		21		20		263	
1														2						9	
																3				14	
																				9	
5		2		2		1		4		3		4		6		2		9		69	
3		1		2		2		9				11		6		4		6		112	
2				1				1				6				2		2		14	
		3		1								2		1		1		6		21	
2								1		1						1		2		25	1
1		1				1										1				8	
3		4						6		9		11		6				2		69	
				1		1		1		1		2		4		1		2		21	
		1						2								1				8	
								2		1		2				5		1		26	
1		2		4		3		7		17		13		5		3		1		129	
								3		16	1			1						20	1
17		7		17		7		9	1	28		17		18		22		12		283	2
190		103		141	3	47		239	4	344	1	379		212	1	155		168		3,829	21

CLASSES OF DISEASES.	THIRD QUARTER.											
	YEARS.....		1839.	1840.	1841.	1842.	1843.	1844.				
	MEAN STRENGTH.....		366.	681.	687.	736.	601.	523.				
SPECIFIC DISEASES.			Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fever.....	Fever continued communis.....				13	2		2		1		
	Fever intermittens quotidiana.....	83	1	95	71	11		59	1	34		
	Fever intermittens tertiana.....			145	19	16		67		45		
	Fever intermittens quartana.....			1	2							
	Fever miasmatica.....	17		30	24	1	9	31		9		
Eruptive fevers.....	Fever typhus.....											
	Erysipelas.....	1		1	1	1						
	Epididymitis.....											
Diseases of the organs connected with the digestive system.	Scarlatina.....											
	Cholera Asiatica.....											
	Dysentery.....	32		36	1	79	78	12		24		
	Dysentery acute.....	12		112	24	21		5		11		
	Dysentery chronic.....				32	1						
	Hepatitis.....											
	Hepatitis acuta.....	5				1						
	Hepatitis chronica.....											
	Gastritis.....	1		16	10	11		7		4		
	All other diseases of this system.....	38		14	25	18		15		8		
Disease of the respiratory system.	Bronchitis acuta et chronica.....	1				1	1					
	Catarrhus.....	28		12	19	55		149		23		
	Pneumonia.....	1			1	1		1		1		
	Pleuritis.....				2	3		2				
	Pneumonia.....			1	1	2		1		1		
Diseases of the brain and nervous system.	All other diseases of this system.....			3	3	2						
	Cephalalgia.....			3	7	6		7		6		
	Delirium tremens.....			5		1	3	1				
	Epilepsia.....			7	3	1						
	Neuralgia.....			1								
Diseases of the urinary and genital organs.	All other disease of this system.....	5		1	4					4	1	
	Gonorrhoea.....	1		24	13	9		3		5		
	Stricture urethrae.....											
	Syphilis primitiva.....	1			1			1		1		
	Syphilis consecutiva.....			1		1						
Diseases of the serous and exhalant vessels.	All other diseases of this class.....			1	5	7		3		3		
	Aneurysm.....	1										
Diseases of the fibrous & muscular structures.	All other diseases of this class.....	1			3	1						
	Pneumonia.....	1		1								
Abscesses and ulcers.....	Podagra.....											
	Rheumatismus, acutus et chronicus.....	19		34	13	36		21		7		
	Psittacus.....				3							
	Pilemon et abscessus.....	18		25	9	28		14		17		
	Ulcus.....			4	2	1		6				
Wounds and injuries.....	Amoeboma.....	1		2	4			2				
	Concreta cerebra.....				1							
	Contusio.....	9		10	22	22		16		11		
	Fractura.....	2		1	1			4		1		
	Luxatio.....	2		2	1			3				
	Purum.....				1							
	Sanbravato.....	5		10	7	5		9		3		
	Vulnus incisum.....	32		21	24	15		18		9		
	Vulnus laceratum.....									2		
	Vulnus punctum.....	3		3	4			1		1		
Miscellaneous.....	Vulnus scissile.....			2	7	2				1		
	Debita.....			1	1			1		1		
	Emetia.....	25		1	13	1				3		
	Hæmorrhoids.....	3		1	3			1		1		
	Hernia.....	1		3	2	1		2				
	Morb. cutis.....	1		3	7	2		2		2		
	Morb. oculi.....	1		6	9	16		9		4		
	Stomatitis.....											
	All other diseases.....	10		12	29	22		15		7		
	Total.....			352	1	736	1	491	4	112	2	489



AMONG THE TROOPS IN THE NORTHERN DIVISION.

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TROOPS AT POSTS IN THE NORTH INTERIOR REGION.—WEST OF THE GREAT LAKES.

THIRD QUARTER.																AGGREGATE STRENGTH.					
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
317.		200.		93.		290.		511.		552.		484.		217.		423.		419.		7,306.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
		15			8		11		5			1		3						61	
63		37		13		1	8		35		7	25		9		3				556	2
21		20		13		30	2		5		14	4		6		2				411	
		1									1					1				6	
18				2			3		5	1	5		4		7		9			178	2
					1											2				3	
																				4	
													1							1	
							2		30	2						1	1			33	3
19		50		16		103	110	1	127		115	1	36		18		59			974	3
2							33		7		11		4		5					247	
		3							5											10	1
		3							2											5	
											1									7	
		2		1																3	
2				3		17	16		21		21		24		3		6			162	
11		7		7		3	12		6		27		13		6		12			224	
					2		13		6				11		1					38	1
7		2		3		44	13		9		40				1		12			419	
					1		1		2					2			1			7	5
					1		3		2		3		2		3					21	
											1		1							8	
1		1		1			5		3		2				2					23	
1		1		3		3	1				10		3		7		1			59	
					2		1						3		7					22	1
2		1					2		1		2		1				1	1		21	1
					1															2	
					2						1	1	3				1			21	2
4		5							1				4				4			73	
		1									2				2					9	
		1					3				2						1			9	
2					2		5		2		3		1		3		2			39	
																				1	
1				2																8	
																				2	
							1													1	
9		4		6		14	21	1	21		29		25		5		6			270	1
																				3	
13		2		2		4	24		19		21		20		27		30			273	
2		6					6		4		10		3		5					49	
1											2		1				2			15	
															1		1			3	
10		11		3		5	31		30		7		13		13		13			296	
							2	1	2		1				1					18	1
					4										1					13	
									3											4	
		2		1			5		7		4		5		7		6			76	
3		1			2		14		4		13		9		14		7			186	
		2					1				2		3		1		3			14	
5		2			1				2		6		2		3		4			38	
		1			1		1														
				1									1		1		4	1		19	2
		4			6		1		2		4		1		1					23	
1		2			1		13		2		15		10		1					91	
1		2		1		1	3		1		3		1				4			26	
		2			1		1		2		1		2							19	
1		1			2		2		2		1				3					23	
2		1		1		4	4		13		11		9		5		10			108	
					3		1				1		1							6	
12		10		9		9	17		28		30		13		9		22			259	
214	1	202		89	1	277		392	3	416	3	429	2	250	2	182		230	3	5,430	25

## REPORT ON THE SICKNESS AND MORTALITY

No. 6. —ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG THE

CLASSES OF DISEASES.	FOURTH QUARTER.												
	YEARS .....	1839.		1840.		1841.		1842.		1843.		1844.	
	MEAN STRENGTH .....	639.		708.		405.		652.		579.		652.	
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers.....	Febris continua communis .....		3		15		2		1		2		
	Febris intermittens quotidiana.....	25	9		65	1	4		50		15		
	Febris intermittens tertiana.....	4	69	1	106		4		56		22		
	Febris intermittens quartana.....												
	Febris remittens .....	3					1		3		5		
Eruptive fevers .....	Febris typhus.....										1		
	Erysipelas .....	4	1								1		
	Rubeola.....												
	Scarlatina .....												
	Variceloid.....												
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....												
	Diarrhœa.....	10	9		19	1	12		4		16		
	Dysentery acuta.....	4	4				2		4				
	Dysentery chronica.....				7	1							
	Enteritis.....												
Diseases of the respiratory system.	Hepatitis acuta .....	1							1		1		
	Hepatitis chronica .....	2											
	Obstipatio.....	1	13		4				5				
	All other diseases of this system.....	25	15		8		20		4		5		
	Bronchitis, acuta et chronica .....	4	4		3		2						
Diseases of the urinary and genital organs.	Catarrhus .....	43	40		40		87		39		48		
	Phthisis pulmonalis .....	1					1		1		1		
	Pleuritis.....	7	1		3		3				2		
	Pneumonia .....	3	1	1	5								
	All other diseases of this system.....		2										
Diseases of the brain and nervous system.	Cephalalgia .....	1	4		4		5		2		3		
	Delirium tremens .....		4		1	1	4		4		2		
	Epilepsia .....	4	2				2				1		
	Neuralgia .....		1		1		1		1		1		
	All other diseases of this system.....	2	3		1		1		1				
Diseases of the serous and exhalant vessels.	Gonorrhœa .....		9		6		11		7		9		
	Stricture urethrae .....		2										
	Syphilis primitiva .....								1		1		
	Syphilis consecutiva .....								1				
	All other diseases of this class.....				3		17		5		4		
Diseases of the fibrous & muscular structures.	Ascites.....												
	All other diseases of this class.....										1		
	Pernio .....	3	3		7		15		1		3		
	Podagra .....												
	Rheumatismus, acutus et chronicus.....	12	43		10		35		10		10		
Abscesses and ulcers....	Fistula .....	1											
	Phlegmon et abscessus.....	8	18		17		16		10		9		
	Ulcus .....	8	9		9		4		2		5		
	Ambustio.....	4	5		2		2						
	Contusio .....	20	21		22		22		12		10		
Wounds and injuries....	Fractura .....	1	2		1		1				2		
	Luxatio .....	5							5		1		
	Punctio.....		2										
	Sub luxatio.....		10		9		5		7		5		
	Vulnus incisum.....	28	38		8		17		7		11		
Miscellaneous .....	Vulnus laceratum.....										1		
	Vulnus punctum.....	3	3				1						
	Vulnus sclopeticum.....				1								
	Debilitas .....				2				1		1		
	Ebrietas.....		12		4		1		7		3		
Miscellaneous .....	Hæmorrhoids .....	3	2		3						2		
	Hæma .....	2	2				2						
	Morbi cutis.....	1					1		1		1		
	Morbi oculi.....	1	4		6		12		5		4		
	Scorbutus .....				1								
All other diseases.....		16	20		7		24		15		13		
Total.....		260	390	2	401	4	337		253		222		

## TROOPS AT POSTS IN THE NORTH INTERIOR REGION.—WEST OF THE GREAT LAKES.

FOURTH QUARTER.																		AGGREGATE STRENGTH.			
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
270.		200.		87.		232.		573.		636.		384.		318.		452.		548.		7,335.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
1		1		2				3		2		1				1				34	
49		29				3		10		7		1		23		3		16		309	1
59		38		2		10		3		12		5		7		2		12		411	1
2		2						1		2		1								8	
12		1								4		4				1		2		36	
																				1	
																1				7	
										1										1	
12		12		4		25		84		36		33		43		22		88		429	1
						1		17		13		1		3		1		1		51	
						5														12	1
								1	1											1	1
		1																		4	
1		1				1														5	
1		3				6		10		19		6		11		4		10		93	
7		3		4		1		17	1	4		9		22		7		14		165	1
						2		2		3								10		30	
14		20		4		3		69		50		42		56		34		39		628	
								1								1		1		7	
2		1		1				8		2		4				2				36	
		1				2		1		8	1			1		1		2		25	2
1								5		1		1		1				1		12	
1		5		1				2		5		2		2				1		38	
1		1				3		1		4		2						1		21	1
1								1	1			1		2						14	1
														2				2		9	
										3				1				2		14	
5		2								3				6		1		2		61	
														1						3	
1										3								1		7	
								1		1				4				1		8	
2						3		1		6				1				3		45	
																				1	
1				1		5		8		2		9		9				8		75	
										1										1	
4		3		1		17		37		22		12		21		12		10		259	
										1				1				1		4	
21		1		1		8		21		18		16		24		29		27		244	
5		4				1		7		13		8		2		1		10		88	
						1		4		3		1						1		24	
5		5	1			10		27		46		13		23		20		18		275	1
				1		3		1		1				1						14	
														3						14	
																				2	
1		3		2				11		9		7		7		7		5		88	
4		1		1		1		13		23		7		11		5		3		178	
		1						2		3		1		4		2		7		21	
								9				2		3				1		22	
1						4		2										1		9	
10		2						2		2		1				2				23	
10		2		1				15		5		11		11		3		1		86	
		2		1		2		9		2		1		3		1		1		32	
		1						1												8	
						2		4		2				4				1		17	
		3		1		1		7		7				2		2		10		65	
1						2		5				3						1		13	
12		11	1	3		2		10		30		8		15		13		26	1	225	2
247		160	2	32		124		433	3	379	1	213		330		178		341	1	4,320	13





# MIDDLE DIVISION.

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## MIDDLE ATLANTIC REGION.

THIS region includes that portion of the Atlantic coast which lies between the 35th and 40th degrees of north latitude, comprising not only those stations which are immediately contiguous to the ocean, but those also which are situated upon the bays and rivers not sufficiently removed from the sea to have decidedly an inland climate.

This class embraces five military stations proper, and two arsenals—one at Frankford, the other at Washington.

The military stations are Forts Mifflin, McHenry, Severn, Washington, and Monroe.

### FRANKFORD ARSENAL

Is on Frankford creek, five miles in a northeastly direction from the State-House at Philadelphia, and one-fourth of a mile from the west bank of the river Delaware.

### WASHINGTON ARSENAL

Is on Greenleaf's Point, at the junction of the Anacostia with the Potomac river, one mile and a half south of the Capitol, in Washington. Its position is not a healthy one, having low and marshy grounds in its immediate vicinity, which, with the subsidence of the rivers in summer, exposing more or less of their beds and banks to the sun, prove fruitful sources of intermittent and remittent fevers. The number of enlisted men stationed here rarely exceeds fourteen, the larger portion of the work being performed by artisans employed by the month.

### FORT MIFFLIN

Is located on a low island in the Delaware river, five miles below Philadelphia. No special report of its topography can be found on the files of the Medical Bureau.

### FORT M'HENRY,

Situated on a peninsula, bounded on the one side by the Patapsco river, and on the other by the harbor of Baltimore, is about three miles distant from the centre of the city, in a southerly direction. It occupies the whole of the extremity of the peninsula, covering an area of 55 or 60 acres; the fort is elevated about 36 feet above the level of the river, when at high-water mark; and as this elevation has a gradual slope in every direction, the drainage is naturally good.

The surrounding country is rather low and level, with occasional undulations; but there are no mountains or very high lands in the vicinity. The soil is mostly argillaceous and silicious. During the summer, the prevailing winds vary from south to east, while those of the winter

are mostly northwest. When blowing from the south, the current of air traverses some low land called Romney marsh, on the opposite side of the Patapsco; but the distance of this marsh from the fort is upwards of a mile.

The annual quantity of rain, on an average of 20 years, is 42 inches.

#### FORT SEVERN.

This post is situated on Severn river, on a point of land which makes out from the city of Annapolis. It is very little elevated above the level of Chesapeake bay. The river is here about 800 yards wide. There are no marshes in the immediate vicinity. The post was abandoned on the 3d of September, 1845, being on that day turned over to the navy for a naval academy.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT WASHINGTON.

By Assistant Surgeon Lewis A. Edwards: 1852.

Fort Washington, Maryland, in latitude  $38^{\circ} 41'$ , and longitude  $76^{\circ} 58'$ , is situated on a high ridge of land, running nearly parallel with the Potomac river, and terminating southwardly in a bluff point, in the angle formed between the river and Piscataway creek. Immediately in rear of the fort (S.E.) is a deep ravine, about 300 feet wide at the top, its sides sloping rather precipitously, about 80 feet in depth. At the bottom there is a level plain of about 70 feet in width, extending the whole length; about 50 yards of this bottom, adjoining the creek, is marshy, and covered with a growth of the swamp-willow. A portion of the valley is under cultivation; the remainder is used as a pasturage. The western slope is thickly covered with a growth of the papaw tree, and an underbrush of dwarf-sunflower and pokeberry. The eastern side, as also the crown of the hill (opposite the fort), is covered with a flourishing young forest. At the foot of this slope runs a small stream, on a sandy bed. West and northwest of the fort runs the Potomac; southwardly is Piscataway creek, which extends up, as an arm of the river, about two miles, at an average width of 800 yards. The water of the creek is very shoal, deposits probably being made year by year. In times past, schooners of 20 to 30 tons could ascend, where, now, the common "long boat" cannot reach. The river is about 1,300 yards in width. The tide has a variation of  $3\frac{1}{2}$  or 4 feet. The shores of the river and creek are gently sloping; the river having a beach of well washed gravel and sand, while that of the creek has a deposit of clay and marl from its banks, and the mud or sediment of the river.

The common river-grass grows abundantly on both shores, the low tides leaving it above the surface of the water.

The men's barracks and a set of officers' quarters are at either end of the parade-ground, which is of fine gravel, and 115 feet above high-water mark. The commanding officer's quarters are situated on the same ridge as the fort, about 600 feet north, a considerable depression intervening, in which the hospital is located, about equidistant from the two points above mentioned, and 80 yards from the river. This ridge is composed of layers of clay, gravel, and marl. Many fossils are found in the vicinity of the marl-beds, opening on the river banks, and in the small rivulet running through the ravine in the rear. A variety of forest-trees are found here, as follows, viz:

White oak, red oak, black oak, Spanish oak, wild cherry, white and red hickory, white and sugar maple, white and black gum, white and red ash, hackberry, red cedar, red and black haw, chinquepin, white and black walnut, white and yellow poplar, beech, chestnut, chestnut oak, locust, white and red elm, dogwood, tulip poplar, papaw, pines (two or three varieties), red and paper mulberry, catalpa, slippery elm, sugar nut, red bud, sassafras, weeping willow, sycamore, persimmon, holly, yellow willow, Lombardy poplar, bayberry, common willow.

Among the shrubs, wild and cultivated, may be enumerated the following, viz:

Alder, sarsaparilla, pokeberry, Jamestown weed, plantain, catmint, horse and garden mint,



Indian turnip, dog fennel, wild pepper-grass, peppermint, winter green or partridge berry, liverwort, wild spice, nettle, Virginia snake-root, dewberry, blackberry, life everlasting, horehound, pennyroyal, horse-radish, garlic, calamus, wormwood, boneset, hops, wild cress, blood-root, swamp lily, prickly ash, ivy and box-wood, mullen, burdock, nightshade, yarrow, sage, balm, sumach.

As I am not acquainted with the botanical names of all the trees and plants, I prefer to give such as are commonly known and recognised through the neighborhood.

I am not familiar enough with the fauna of this district to give any details.

The meteorological tables, embracing a period of about 14 months, are too meagre to furnish any deductions in reference to climate. I may state, however, that the prevailing winds appear to be from the southward, and that the average quantity of rain, during this period, has been about two inches per month.

In past years it was the custom to form summer encampments for the troops, in the highlands either of Virginia or Maryland, from about the middle of July till the beginning of October. During the last four years, the troops remained at the fort throughout the summer. On comparing the statistics of diseases for that period, with those for corresponding quarters as found in the tables published by the Department in 1840, we find a decrease in the ratio of all diseases.

Intermittent fever still prevails over all other disorders; but, taking into consideration the fact that, 20 years ago, the troops were absent from the post nearly the whole of the 3d quarter, it would appear that it had very much decreased in *frequency*. As regards *severity*, I can form no comparison, as in the printed reports no particular mention is made of the *grade* this form of fever assumed. The bare circumstance, however, of the troops leaving the fort every summer, shows that it was not judicious that they should be exposed to the attacks of this fever. Relying on the printed reports as an index of the prevalence of this affection in former times, my experience of the last year justifies me in asserting that it is very much modified. I believe that intermittent fever is not only less frequent in the neighborhood than formerly, but that it bears a milder form. In these opinions I am sustained by the experience of persons residing on either shore of the Potomac. The proprietor of Mount Vernon has frequently assured me that within a few years past—eight or ten—the affection has appeared with less frequency and severity among his own family, and the negroes belonging to the estate. I have found the disorder readily disappear on the exhibition of quinine, in moderately large doses—from 12 to 20 grains given at a single dose, from eight to fourteen hours before the expected paroxysm. In one case, the morbid agent seemed to lurk in the system, suddenly showing itself at very irregular periods, after there was every reason to suppose it had fled before the potent spell of cinchona and calomel. Liquor: potass: arsenit: had the effect of quenching this *intermittent flame* for a period of two or three successive months, when again it would burst forth. This patient was a laundress, who occupied one of the casemates (ever unfit places for persons to inhabit), and was of a peculiarly bilious temperament. Remittent fever has certainly diminished. I subjoin a table showing the relative frequency of intermittent and remittent fevers, at periods of about 20 years interval. The records for the fourth quarters, being imperfect, are omitted:

Quarters -----	FIRST.				SECOND.					THIRD.				Total.
Years -----	1829.	1830.	1831.		1831.	1832.	1833.	1834.		1830.	1832.	1833.		
Mean strength -----	50	58	63	171	59	48	61	57	225	48	47	56	151	547
Intermittent fever.-----	1	1	11	13	8	5	8	10	31	10	15	18	43	87
Remittent fever.-----					5	2	2	1	10	5	-----	1	6	16

Quarters -----	FIRST.				SECOND.					THIRD.				Total.
Years -----	1850.	1851.	1852.		1849.	1850.	1851.	1852.		1849.	1850.	1851.		
Mean strength .....	50	62	56	168	66	46	61	52	225	50	44	56	150	543
Intermittent fever..	4	4	4	12	3	15	2	3	23	8	9	5	22	57
Remittent fever .....										7	1	4	12	12

I am unable to arrive at any satisfactory conclusion as to the cause of the diminution of malarial fever in this vicinity. The lands have always been as much cultivated; the duck-weed, or river-grass, has not been less abundant, or less exposed to the action of the atmosphere and sun by the low tides, than formerly. More care has not, probably, been bestowed by the command or the neighbors upon themselves, or those connected with them, than formerly. It cannot be said that those exposed to the malaria have become acclimated, for two sets of troops have formed the garrison within the period embraced in the tables, and new families have settled in the vicinity. There may be epochs of visitation of these fevers in greater or less intensity; or, the increase of other disorders—antagonistic they may be considered—may have tended to break up this almost monopolizing influence. But there are no grounds for adopting either suggestion as an explanation; the facts will not sustain any such conclusion.

The remaining diseases require no special notice as to etiology or frequency; they are such as ordinarily occur to individuals in like numbers and circumstances. In the diet and water we can find no cause of disease. The former has been that of the regular ration and common garden vegetables, and the water used collected from slate roofs into cisterns of mason-work.

There were 4 deaths during the last four years: one of hæmetemesis, one of varioloid (in a scrofulous subject), one of dropsy, and one of drunkenness and subsequent exposure to cold. The aggregate mean strength is 181, and the annual ratio of mortality is about 2 $\frac{1}{2}$  per cent.

In the etiology of disease in general, the following table will show the relative influence of seasons:

Seasons.	Mean strength.	Number treated.	Ratio per 1,000 of mean strength treated quarterly.
Three first quarters.....	168	41	244
Four second quarters .....	225	71	315
Three third quarters.....	150	69	460
Annual ratio.....	181	181	1,000

Once only in twelve months, therefore, was each man reported sick.

I have not been able to procure any statistics in relation to the health of the neighboring country. I may state, however, that, beyond the first range of hills bordering on the river, intermittent and remittent fevers are not common; but bilious fever is more prevalent. Dysentery and diarrhœa are general during the summer months, and pneumonia and catarrh during the winter and spring.

In concluding this report, I may be permitted to state that I found very little material to work upon. I have employed it in the best manner that suggested itself to me.



## MEDICAL TOPOGRAPHY AND DISEASES OF FORT MONROE.

By Surgeon Henry A. Stinnecke: 1852.

The geographical position of this post properly pertains to the middle region of the United States, being in lat.  $37^{\circ} 2'$  north, long.  $76^{\circ} 12'$  west. It occupies the extremity of a level sandy beach, known as Old Point Comfort, Virginia—a point of land forming the terminus of the western shore of the Chesapeake bay.

The most prominent physical features it presents are its watery environs, being encompassed on every side (with the single exception of a narrow strip of sand-beach on the north) by water, viz: on the northeast, east, and southeast, by the waters of the Chesapeake bay; on the south and southwest, by those of Hampton Roads; and on the north and northwest, by Mill creek, an inlet of Hampton Roads.

Bordering upon Mill creek, on the north and northwest, and in pretty close proximity to the fort, tolerably extensive margins of salt-water marsh prevail. These, however, from their two-fold character of tidal and salt-water marsh, are innocuous as respects any deleterious malarial influence.

A barren sandy plain, extremely limited on the west and southwest, narrow, but stretching out to a considerable distance on the north to form the peninsula, on the extremity of which the defences are built, constitutes mainly the terrestrial surface presented to view.

The geological formation of this peninsula is that of ocean sand resting upon clay.

The general aspect of the country, both proximate and distant, is uniformly low and flat.

The very limited extent of barren sandy ground, and the consequent almost entire absence of soil immediately around the fort, are necessarily productive of a circumscribed vegetation in the shape of trees, shrubs, plants, or grapes.

In scattered and limited spots of soil (and this mostly of artificial formation), among the few observable products of the vegetable world, may be seen the dandelion (*leontodon taraxicum*), the santonicum (*artemisia santonicum*), and the wild garlic (*allium sativum*.)

Within the enclosure of the work, and growing sparsely on the grounds immediately contiguous to it, the live-oak, in its evergreen foliage, is quite conspicuous; having been here retained and preserved, for purposes of ornament, in the original clearing of the grounds.

What renders the presence of this tree (the live-oak) here more particularly worthy of notice, is the fact, that this point is the extreme northern limit of the southern Atlantic coast at which it is found to thrive, or found at all.

In the neighboring forests and woodlands (distant from two to four miles), the usual varieties of native trees, shrubs, and plants, pertaining to the middle regions of the United States, are met with, viz: the pine (*pinus palustris*), which is the predominant tree of the country; the oak, in its different common species, (*quercus alba*, *Q. rubra*, *Q. nigra*); the gum, cedar, walnut, locust, chestnut, and hickory (in small quantities) are associated.

In some localities the association of these various trees is in tolerably fair proportions; while in others, the oak, the gum, and cedar are in nearly equal prevalence with that of the pine.

In these woodlands and forests, and on their borders, interspersed in moderate profusion, grow also the dogwood (*cornus florida*), the crab-apple, and the common yellow jasmine, which, with their gay blossoms and delightful fragrance, lend additional charms to the attractive beauties of vernal scenery.

CLIMATE.—The geographical locality of Old Point Comfort, Virginia, intermediate between those relative divisions of the United States recognized as having climates positively northern and southern in their characters, would naturally denote the climate of this position to be that of an intermediate, mild, or temperate one; and such the leading meteorological phenomena of the different seasons impress upon it.

The winters are open and mild, but seldom accompanied with such depressions of temperature as give rise to snow. The same general condition of atmosphere (excepting depressed



temperature), terminating in a fall of snow a degree and a half, two, or three degrees north of this, proves here only productive of rain.

The fruits in cultivation also evidence its mild and intermediate qualities of climate; for while the fig and grape find the heat adapted to their wants, the apple, pear, and cherry thrive well in a congenial atmosphere; though of these different and opposite classes of fruits, none, we think, ever here attain that perfection they are susceptible of in closer affinity with their natural requirements of climate.

In connexion with this subject, climate, we would observe that the proximity of this particular position to the ocean, its direct communication therewith by an unobstructed, expansive watery surface, its little altitude above the level of the sea, its encompassment by water, the refrigerating effects of (quite constant) winds, are causes operating to impress upon its atmosphere such appreciable modifications as to render it rather distinctive in character from that of more internal and less exposed localities near at hand.

The most obvious of these ærial modifications are deemed to be a greater amount of humidity, a perceptible decrease of temperature, and a low state of electric tension.

The existence of this altered or modified condition of local atmosphere is distinctly visible in its checking the advances of spring, by retarding the action of all physical agencies; in the development and growth of vegetation, when compared with that of surrounding districts; in the rapid and large accumulation of mould on all articles susceptible of imbibing moisture; in weakening and relaxing the animal tissues; and in exalting the impressibility of the entire system. In a practical point of view, professionally considered, the most important consequences of these peculiarities of air, are the tendencies (noticed) to affect the animal tissues—tendencies manifested in the frequent induction (and obstinacy when induced) of certain of the profluvia, such as leucorrhœa and menorrhagia.

Similar pathological conditions, and referrible to like causes (humid air), are, we believe, noticed as pertaining to the coast of Holland. Leucorrhœa and menorrhagia, therefore, together with a portion of the rheumatic cases, being here so apparently dependent upon local influences, may be correctly placed under the head of incidental or local diseases.

But the most active properties, and consequent physiological impressions connected with, and dependent upon, the atmosphere of this locality, must be referred to its constituents, as a marine air. The potent influences of the air of the ocean are more fully recognized than definitely understood. Its effects and operation upon the system are distinctly evinced by imparting an increase of activity to all functional action; indeed, exalting the organic life and discerning processes of the entire glandular apparatus of the animal economy. We have long entertained the opinion, and accordingly have long been in the habit of ascribing these active properties of sea air to the chemical principles of iodine and bromine contained therein.

These principles are recognized as constituents of ocean water, in the form of iodide and bromide, of soda and magnesia. The presence of iodine or bromine to the air of the ocean may not be susceptible of proof by any endometrical process, precisely as the miasmata of marshes and the effluvia of infected places are insusceptible of demonstration. Yet, notwithstanding this inability of chemical analysis to detect their presence, we conceive that through the process of evaporation, constantly in progress at the ocean's surface, these chemical principles, iodine and bromine, are taken up, and thus become constituents of the ocean air.

The efficacy of a marine atmosphere as an alterative, is, we think, but imperfectly appreciated.

In cases of glandular obstruction, interrupted and deranged functional action, in old and long-standing cases of dyspepsia (invariably accompanied with, and dependent upon, such impeded and altered vital action); in many cases of uterine functional disorder, too, frequently rendering this organ prolific, when otherwise torpid and barren as regards its special function (conception), we believe a marine air to be, in point of potent alterative properties, quite equal to any one of this class of therapeutic agents.

With this opinion we would couple the intimation that important errors prevail respecting the length of time requisite, by its employment, to secure the remedial advantages desired. No one, it is presumed, would direct the use of iodide of potash or cod-liver oil (to which, in alterative properties, the sea air is somewhat analogous) as an alterative, and expect to obtain permanent salutary impressions in the course of a week, ten days, or a fortnight. Yet, such are the transitory periods for which most invalids place themselves under the influence of a sea air.

These limited periods of time are entirely too short for effecting anything like a permanent beneficial impression. It is true, they are long enough for favorable effects, but only such as are so wholly evanescent and transitory in character as to pass away with the passing away of the individual from the scene and circumstances imparting them.

For a permanent result, marked and definite in its character, periods of from six weeks to six months should be employed in most cases of chronic ailment for which a marine air may be deemed suitable.

As allied to this subject of sea air, we would here allude to that unpleasant affection known as sea-sickness; our purpose being to offer the opinion, that in most of the aggravated and protracted cases of this peculiar abnormal state of system, they are far less (in accordance with popular belief) dependent upon the unsteady motion of the vessel, than upon impressions made on the peripheral nerves of the ganglionic system distributed to the stomach and alimentary tract.

And we would assign as a source or cause of these impressions, such peculiar properties of the sea air as those given to it, and already noticed, viz: the iodide and bromide of soda and magnesia. The *rationale* of their mode of operation is, we conceive, readily obtained by the bare statement that these constituents of the ocean air are, by the process of respiration, taken in and imparted to the blood, and, through this channel, to the ultimate filaments of the ganglionic nerves; or, in other words, the delicate special sentient organism of the stomach and bowels receives the impressions productive of the peculiar morbid effect.

In elucidation of our proposition, we would refer to the operation of certain poisons, which, when introduced into the alimentary canal, affect life, in consequence of the direct nervous connexion subsisting between the gastric and enteric mucous surfaces and the common sensorium. Yet the same poisons, taken in by inhalation, produce their effects exclusively through the medium of the circulation.

PREVAILING DISEASES OF THE POST.—The abnormal states of system most frequently falling under professional attention at this post, deviate but little from the various ordinary diseases incident to the middle States.

In type, character, and prevalency, in common with the same class of complaints elsewhere, they are found so associated with, and dependent upon season, as properly to require a general classification or division into that of summer and winter diseases.

The nervous, cutaneous, and intestinal-mucous tissues, more than any other portions of the animal economy, during the hot months of summer, become the seat of such morbid action as is productive of disease.

In accordance with the severity of impression (either sedative or hyperæmic) made, the portion of alimentary tract concerned, the implication of particular tissues—such as the mucous, sub-mucous, cellular, and muscular tissues—together with the accompaniment of more or less interrupted and embarrassed hepatic function, the hot months of summer induce the common pathological states known and embraced under the terms “gastric irritability,” “biliary derangement,” “dysentery,” “diarrhœa,” “cholera,” and “cholera infantum.”

*Dysentery.*—The remote or exciting causes of this disease are now pretty well understood to be heat and vicissitudes of temperature.

The pathology of dysentery may be summed up in the brief statement, that it consists in a



loss of the equilibrium of the healthy innervation and vital function existing between the skin, large intestines, and liver. The more immediate morbid effects are seen in a suppressed perspiration, engorgement of the portal and hepatic circulation, with the consequent derangement and interruption of the biliary secretion; engorgement and excessive irritability (amounting in some cases to subacute inflammatory action) of the entire tissues (especially the mucous) of the large intestines, particularly the descending colon and rectum.

The principles for the guidance of our treatment, based upon this pathology, must necessarily be the restoration of the lost equilibrium of innervation and circulation of the skin and internal membranous and solid viscera, together with the re-establishment of the perspiratory function and biliary secretion.

These desirable purposes are in almost every case readily accomplished by the appropriate combination of such medicines as meet and gradually fulfil the different wants: that is, mercury, to act upon the secretions of the liver; ipecacuanha, to restore the functions of the skin; and opium, to allay the inordinate action, pain, and irritability of the implicated bowels.

Our usual prescription, therefore, consists of a pill of the above medicines, varying in its proportions of each, and varying, also, in intervals of administration, according to the severity of the disease, the age, temperament, and constitutional vigor of the patient, viz: Calomel, grains  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1, or  $1\frac{1}{2}$ ; opium, grains  $\frac{1}{3}$ ,  $\frac{2}{3}$ ,  $\frac{3}{4}$ , or 1; ipecac: grains  $\frac{1}{2}$ ,  $\frac{3}{4}$ , or 1; to be given suitably with the requirements of each particular case, at intervals of four, five, and six hours.

The employment of these remedies for eighteen, twenty-four, or thirty-six hours, is ordinarily attended with an abatement of the abdominal irritation, pain, and tenesmus; their further use is then temporarily suspended, and a half-ounce or ounce of oleum ricini is given as an aperient, for the purpose of unloading the bowels and facilitating the expulsion of morbid secretions.

This object effected, the previous prescription (the mercurial, anodyne, and diaphoretic pill) is resumed.

Should the disease not be relieved, the continuance of this treatment is not checked until some slight mercurial impression shows itself. Upon the occurrence of this, the sub: mur: hydrargyri is dispensed with, as a constituent of the pill; and a like, or a little increased quantity of pulvis camphoræ is substituted; and, with this change, the remedies are continued.

The adjuvants brought to the aid of this medicinal treatment embrace but little more than keeping the patient for the first day or two on warm barley-water, tea, toast, boiled rice, and a small allowance of light animal broth. After which, if nothing unfavorable forbids it, an increased quantity of animal broth is permitted.

*Diarrhœa*.—This complaint, in respect to its remote causes, physiological interruptions concerned, and ultimate sickness incurred, bears so strong a resemblance to dysentery as to require but a concise notice of the partial pathological differences distinguishing it from the latter disease.

In diarrhœa, as in dysentery, the depressed action and checked function of skin occurs; the obstructed portal and hepatic circulation and suppressed biliary secretion are also the same. But here the resemblance ceases; and the chief distinction presents itself in the intestinum tenue; the jejunum and ileon being the seat of the most prominent disturbance rather than (as in dysentery) the colon and rectum.

The diverse organic structure and function, and greater extent of surface of the small intestines—the portion of alimentary tract concerned in diarrhœa—could not, in resulting effects from the same remote causes, fail to originate such different disorder as to furnish the usual line of demarcation laid down by authors between diarrhœa and dysentery; that is, the thin watery faecal dejections of the former, while they consist chiefly of mucus or blood in the latter.

From the close pathological resemblance and remedial indications in the two diseases, our therapeutic means in diarrhœa vary but little from those already given for the treatment of dysentery. In all the severer cases of diarrhœa, we have recourse to the mercurial, anodyne, and



diaphoretic pill, enjoining the directions given for its use in dysentery. The only deviations in the treatment of this complaint, from that pursued in dysentery, are comprised in the less frequent use of the aperient (*ol. ricini*), and in combining with the calomel, opium and ipecacuanha, when much atony of viscera is present, three-fourths of a grain, a grain, or a grain and a half of gum camphor.

The milder forms of diarrhœa are readily relieved, and a cure effected, by correcting and restoring the unhealthy secretions, through the corrective and alterative use of small doses of hydra: sub: muriatis, or mass: hydrargyri, according to the following formulæ, viz:

Hydrar: sub: mur: grs.  $\frac{3}{4}$  to 2; pulv: gum: camph: gr.  $\frac{3}{4}$  to  $1\frac{1}{2}$ ; pulv: ipecac: gr.  $\frac{1}{2}$  to  $\frac{3}{4}$ ; make a pill, and give one every third or fourth hour during the day: Or, mass: hydra: grs. 4 or 5; pulv: gum: camph: gr.  $\frac{3}{4}$  to  $1\frac{1}{2}$ ; pulv: ipecac: gr.  $\frac{1}{2}$  to  $\frac{3}{4}$ ; make a pill—one to be taken every fourth hour.

With these prescriptions, we frequently prescribe, at the same time, tinct: opii camph: and spirits camphor, each  $\frac{1}{2}$  drachm, to be given twice, thrice, or four times daily, in a saucer of warm infusion of common green tea.

It is owing to the enervating effects of heat, and especially its long continued and uninterrupted sedative influence upon the skin, that bowel complaints present so obstinate and unmanageable a character, and so often assume a chronic form in hot climates.

Furthermore, when the tone or innervation of the surface falls below that measure of vital force capable of reactive efforts, these forms of disease are no longer recoverable under the given physical circumstances of life; the only hope for recovery consisting in the removal of the patient to a colder atmosphere, and one, too, of sufficient tone to impart new life and vigor to the skin, muscular fibres, and tissues of the body generally—indeed, invigorate anew the entire frame.

For the relief and successful treatment of chronic dysentery and diarrhœa, we have derived decided advantage from the use of oxide of silver, combining it with a minute quantity of opium (not enough to check any of the secretions), say the tenth of a grain, and a trifle of some aromatic, such as one grain of pulvis nux moschata—the whole to form one pill, to be administered twice or thrice a day; together with the use of this article, enjoining a proper diet and suitable attention to all the habits of life.

By virtue of its tonic and astringent properties, the sesqui-pernitratis ferri has also been found valuable as a remedy in these troublesome chronic affections of bowels. But due attention must be observed in using none but that of recent preparation; otherwise, through precipitation, which is apt to take place, its active medicinal properties are lost, and its use then only serves to disappoint expectation.

*Cholera (epidemic) and common cholera morbus.*—Attentive observation cannot fail to induce the conclusion that the peculiar phenomena of cholera are to be traced, chiefly, to the action of the remote cause (whether of specific cholera or common cholera morbus) upon the organic system of nerves.

To elucidate this principle of the pathology of the disease—namely, that the action of the remote cause is concentrated upon, and is the onus of the morbid impression felt by the chylopoetic viscera, and essentially through their nervous or organic properties—we would refer to the operation of specific exciting causes of other diseases, such as the effects of marsh effluvia, as seen in the production of its special types of fever; the contagion of the exanthemata, showing their special tendencies in the resulting eruptive fevers, and in the specific influence of the exciting cause (epidemic constitution of atmosphere) of influenza, or specific catarrh.

Explanatory of the connexion between cause and effect in cholera and cholera morbus, and their exciting agents, there can be little doubt that in the epidemic variety a special influence exists, acting, however, indirectly; while in the sporadic or common form, intemperance, improper, injurious, or too much food, unripe and unsuitable fruits or vegetables—in fact, whatever is calculated to make a pernicious impression, makes that impression directly; together with

which, the impression is generally made upon a predisposed system, rendered thus predisposed by the disturbing influences of summer heats.

The mode of indirect action of the remote cause of specific cholera, already mentioned, would be explained by stating, in the first place, that it is conceded on every hand the cause exists in the atmosphere; but whether in the form of a subtile poisonous effluvia or not, is not so well understood; though, for our part, we think the electrical condition of atmosphere has much to do with it. With this, its confessed existence, in an extremely subtile form, in the atmosphere, there can be no doubt that the most apparent, if not the only mode, through which its deleterious impressions upon the system can be effected, is by imbibition through the respiratory functions.

From this source, and by this mode, then, it is imparted to the blood; its presence in the circulating fluids serves very soon to deteriorate, deprave, and render these fluids unfit for maintaining in organic function and healthy secretion the viscera of the larger splanchnic cavity. This becomes conspicuously manifest in the production of diarrhœa, the first, or initiatory stage of this fatal disorder, cholera.

This stage of diarrhœa continues for a longer or shorter period; all the while, however, (hour by hour, with an increasing ratio,) tending to weaken and depress the general health, and in an uncommon degree reduce and weaken the organic nervous power of the different chylipoetic viscera, until at length a point of depression and prostration is attained, below that which serves to sustain an equalized relation of action between them, or that integrity of organic life needful to each separately.

The pathological changes consequent upon this subversion and exhaustion of the organic nervous power are, great irregularity of the general circulation, and excessive irritability of the entire assimilating tract, marked in the incident prostration, and in a retroverted action of the stomach and upper intestines; while the lower portions of intestinal tube are so enfeebled in life and strength of capacity, as to be incapable of sustaining, with quietude, the slightest impression made upon their extremely irritable lining surfaces. The abnormal condition just described constitutes the second stage, or disease proper (cholera).

This second stage, or state of open and urgent disease, is not of long continuance ere it brings about the third and last, or stage of collapse; when the sunken countenance, the cold and livid surface, the cramps of the extremities, the feeble and irregular mental action, all display the extreme implication of the circulation and entire nervous system.

It is conceived, then, that in open, specific cholera, the leading pathological principle is to be found in an impaired and subverted innervation of the ganglionic system of nerves pertaining to the abdomen.

Keeping in view this principle as the fundamental, our endeavors to relieve and cure must accordingly be directed to the adoption of such measures as are known and found to be suitable for sustaining, in the first place, and then recovering, and restoring to a natural state (or one at least capable of acting and reacting, on the remedies to be employed), the splanchnic system of nerves.

With this leading morbid feature in view, the remedies first in importance must necessarily be active stimulants, and diffusible stimulants, to counteract the prostration, and bring about reaction.

For the particular resulting consequences, such as the engorgement of organs, disabled functions, disordered secretions, and extreme irritability, the more special remedies required are small and divided doses of hydra: sub: mur.; to restore the secretions; small and divided doses of opium, to allay the excessive irritability; with small and divided doses of camphor, to sustain the enfeebled nerves. We often, also, add a minute quantity of ipecacuanha, to promote the action of the calomel.

Most generally, nothing unfavorable occurs to prevent the ready and successful management of the initiatory stage—that of diarrhœa. The treatment we find best adapted to it is, with



some modifications, the one heretofore stated for ordinary summer diarrhœa, namely: *Hydra: sub: mur: gr.  $\frac{3}{4}$  to grs. 2; pulvis camph: gr.  $\frac{3}{4}$  to gr.  $1\frac{1}{2}$ ; pulvis ipecac: gr.  $1\frac{1}{2}$ —fiat pil: j;* modifying the prescription in this (the epidemic) form by the addition of a half to one grain of *pulvis opii*. The pill made from any one of the above quantities is directed to be taken at intervals of three, four, and five hours, according to the requirements of the case. While, in the larger proportion of cases, this prescription, with the aid of ordinary drinks, may be principally relied upon; yet, again, many will occur where the exhaustion of the nervous system, the exhaustion of the fluids of the body (from the frequent watery evacuations), and the irritability of bowels, is so great as to demand stimulating drinks and additional anodynes.

These urgent indications are to be properly met with decoct: *hordei* (fervent) made suitably stimulant by the addition of brandy, or the common pleasant beverage of mint julep, in portions of from one to three ounces. Together with these drinks, we occasionally give (in a portion of the one used) a draught of a drachm or a drachm and a half of spirits of camphor, essence of peppermint, and laudanum, of each equal parts.

Frequently the milder forms of this epidemic diarrhœa admit of being readily and perfectly relieved by so simple a treatment as one or two grains of *hydra: sub: mur:*, the like quantity of *pulvis camph:*, and half a grain of *ipecacuanha*, given in the form of a pill, four or five times daily; or from three to five grains of *mass: hydra:* with one or one and a half grain of *pulvis camph:* and half a grain of *ipecacuanha*, in a pill three or four times a day; in union with which, exhibiting occasionally a full dose of *tinct: opii camphorata*.

As is now clearly understood, the judicious treatment of this, the primary stage (diarrhœa) of cholera, obviates in a large majority of cases the development of the subsequent ones. But notwithstanding, from a variety of causes, we are not always allowed the advantage of thus easily relieving the complaint; but, on the contrary, its management is required in the far more troublesome shape of the second or fully developed stage of violent vomiting and purging.

On being required to prescribe at this period (the second stage) of the disease, our reliance is still mainly upon small portions of calomel, opium, and camphor, with a minute quantity of *ipecac* sometimes added, exhibited as directed in the treatment of diarrhœa.

Commencing, therefore, at once with the administration of these medicines (in the form of a pill), to be repeated every third or fourth hour, the more urgent indications (vomiting and purging) are conjointly met with the same stimulants and cordials recommended in the first stages, but here used with much greater freedom in quantities and in frequency of use.

These remedies alone will often be found inadequate and unavailing, and consequently auxiliary means demanded; in resorting to which, our expectation has not often been disappointed in the use of the following adjuvants, to wit:

Warm stimulating cataplasms of mustard and Cayenne pepper, or even an epispastic to the abdomen; frictions with stimulating liniments to the spine, or the application of a mustard sinapism between the scapulæ, and increasing the internal stimuli and opiates by giving an occasional cordial draught composed of aromatic confection, *tinct: opii*, æther, or Hoffman's anodyne, liquor, and mint or cinnamon water, viz: *Aromat: confect:  $\frac{1}{2}$  drm. to 2 scruples; æther sulph:  $\frac{1}{2}$  drm. to 1 drm.; tinct: opii, drops 30; aqua menthæ piperitæ, 1 ounce to  $1\frac{1}{2}$  ounces. Fiat haustus.*

A more ordinary admixture of stimulants, and the one we more commonly resort to, is a pretty free draught of warm barley-water and brandy, equal parts, exhibiting in it full doses of spirits of camphor, æther, or Hoffman's anodyne and essence of peppermint.

Where, in opposition to these remedies, diligently employed, the disease continues and tends to exhaustion and collapse, we have derived decided benefit from the use of nutrient enemata, such as thin mutton or chicken broth, rendered effectively pungent with *pulv: sem: sinap: alb: or pulv: capsicum annuum.*

In no condition of disease is the practical application of the proverb, "give strong drink unto him that is ready to perish," more appropriate than in the collapse attendant upon cholera.



Here, truly, is the individual about to perish; and we as truly are required to endeavor to prevent it by giving strong drinks. And, indeed, besides such agents as may be embraced in this general term, we know of but few means wherewith to sustain our endeavors. Attention can only be directed, with any confidence, to the hot and warm bath, or wrapping the patient up in heated blankets, and directing at the same time the liberal employment of almost any and every article comprised in the terms *strong drinks* and *stimulants*.

In our previous remarks upon the prevailing diseases of this post, they were classified or divided into those of summer and winter. We have, therefore, briefly to notice those of the latter season.

As a well-known general principle, the effects of cold in its abnormal impressions mostly involves another set of structures from those heretofore under consideration—to wit: the thoracic organs. Consequently, the cold, variable weather of the winter and early spring months is here, in about the same ratio of fertility as most other places, productive of such disorders as common catarrh, bronchitis, pneumonia, pleura-pneumonia, and pleuritis.

From the imposed regularity of the soldier's habits of life, and his facility of access to medical advice, almost all cases of sickness in garrison are seen under the favorable condition of their early stages, and mostly unattended by any of the serious complications so apt to be present when neglected or badly treated in their primary forms.

For reasons of this kind, it is but seldom that cases of any of those acute pulmonary complaints are presented of so grave or aggravated a character as to render their treatment at all difficult, or otherwise than plain and simple.

To sustain this proposition of therapeutics respecting these diseases, we would simply adduce the fact, that, in the larger proportion of the worst forms of pneumonic disease occurring here, general or local blood-letting is not called for, or can, with perfect security, be dispensed with.

As a method of efficacious and speedy relief in common catarrh and the lighter bronchial affections, we find nothing better than the tartras antimonii et potassæ given in nauseating and diaphoretic doses. Our principal reliance, therefore, in the treatment of those affections, is upon that article, in combination with the citrate of potassa, their employment being conducted according to the following formula, viz: Tart: antimonii et potassæ, 1 grain; citras potassæ, 1 drachm; aqua pura, 4 ounces. Fiat mist:—of which half an ounce is given for a dose, and repeated every second or third hour, until an amelioration is had.

With the above prescription, and with the view of promoting a salutary action in aid of it, such adjuvants as warm decoctum hordei, or infus: sem: lini:, either plain or acidulated, as may be deemed most advisable, are employed, being directed to be drank freely.

In thus giving the tartrate of antimony and citrate of potassa according to the preceding formula—one-eighth of a grain of the former, with some seven and a half or eight of the latter—these proportions are sometimes found to be not exactly suitable; the tartrate of antimony not being in sufficient quantity to excite nausea, and the citrate of potassa in excess tending to purgation. A little variation in the proportions of either, as the case may be, is all that is requisite to attain the purposes in view—slight nausea, diaphoresis, and moderate action upon the bowels.

When aperients are called for, the sulphate of magnesia, in three drachm doses, conjoining with it an eighth or sixth of a grain of the tartrate of antimony, exhibited at intervals of two hours until an aperient effect results, is the one we usually select in catarrhal affections.

With respect to the more intense or higher grades of pulmonic disease, we still have recourse to the tartrate of antimony; using it here, also, in divided doses of the sixth or eighth of a grain, in combination with seven or eight grains of the nitrate of potassa; uniting with them, when a deobstruent is required, or any biliary derangement present, one grain of hydra: sub: mur:, prescribing these quantities in the form of a single powder, at intervals of two hours, for six or eight repetitions, or until some favorable impression is induced.

With this medicinal treatment, the diluents before mentioned, warm decoctum hordei et infus: sem: lini, acidulated and plain, are freely administered as a drink.

Therapeutic management of this kind, actively instituted in the first stages of most thoracic affections, obviates subsequent troublesome complications, and likewise the necessity for general or local blood-letting, or counter-irritation: occasionally, however, these active remedies are required, and recourse is had to them.

Although the entire district of country contiguous to this post is annually subjected to the calamity of having rife every form of malarial fever, the immediate locality of Fort Monroe may justly claim exemption from that evil. The few cases of remittent and intermittent fever occasionally noted in the quarterly reports of sick from hence, within the last two or three years, are readily traceable, in their origin, to exposure to places well known to be prolific in noxious marsh exhalations and their corresponding ills.

It is thought worthy of observation, that, in the course of four years' service at this post, no one case of any one form of the exanthemata has ever fallen under our observation. During the time this immunity has shown itself here, they have frequently prevailed, both in sporadic and epidemic character, in various sections of the United States, and, in several instances, so close at hand as Norfolk, Virginia, only some fifteen miles distant.

The opinion is entertained, that, owing to peculiarities of climate and other physical influences, all the exanthematous fevers would present here a milder grade of sthenic action, and certainly far less organic implication, than when occurring in a more northern atmosphere, or one of greater tone, as to dryness, cold, and electric tension.

## DISEASES.

The following table, compiled from abstract No. 1 for this division, gives a condensed view of the amount of sickness and mortality:

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	5,693	2,804	19	492	3.3
Second quarter.....	5,841	3,266	17	560	2.7
Third quarter.....	6,940	5,078	67	731	9.5
Fourth quarter.....	6,723	3,114	14	463	2
Annual ratio.....	6,299	14,262	117	2,264	18.5

From the foregoing data, it appears that the proportion of cases of sickness to the mean strength of the command is 2.26 to 1; and that the ratio of deaths to the number of troops is 1 in 53.7, or 1.8 per cent. The proportion of deaths to cases treated is 1 to 121, or 0.82 per cent.

The cause of this high ratio of sickness and death is explained by reference to the original report for Fort Monroe, for the third quarter 1848, which shows a total of 132 cases of remit-



tent fever, 42 of yellow fever, 328 of diarrhœa, and 42 of acute dysentery, occurring in troops which arrived during that quarter, either direct from Vera Cruz, or by the way of New Orleans. An examination of the abstract shows that in the third quarter of 1848 the "mean strength" was 736; the number of cases treated, 848; and the deaths, 56. If we leave out altogether the statistics for that quarter, we have the following as the mean results for this region for a period of fourteen and three-fourths years:

*Annual ratio.*—Mean strength, 6,115; cases treated, 13,414; deaths, 61. This makes the proportion of cases to the number of troops 2.19 per cent., and that of deaths 1 in 100, or one per cent. The ratio of cases treated would be 1 in 219, or 0.45 per cent.

## FEVERS.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength -----	5,693		5,841		6,940		6,723		6,299				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Febris continua communis.---	5	0	17	0	32	0	12	0	66	0	0 in 66	10.4	
Febris intermittens quotidiana	32	0	71	0	180	0	85	0	368	0	0 in 368	58	
Febris intermittens tertiana..	181	0	289	0	417	0	333	0	1220	0	0 in 1220	193	
Febris intermittens quartana..	9	0	20	0	28	0	21	0	78	0	0 in 78	12.3	
Febris remittens.....	19	1	38	0	263	3	51	1	371	5	1 in 74	59	
Febris typhus.....	2	0	1	0	5	0	3	0	11	0	0 in 11	1.7	
Febris typhus icterodes.....	3	0	2	0	44	36	0	0	49	36	5 in 7	7.7	
Total -----	251	1	438	0	969	39	505	1	2163	41	1 in 53	343	

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	5,693		5,841		6,940		6,723		6,299			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica.....	0	0	0	0	0	0	0	0	0	0	0 in 0	0
Diarrhœa.....	121	0	346	0	983	15	218	1	1668	16	1 in 104	266
Dysentery acuta.....	58	0	192	0	343	2	125	2	718	4	1 in 179	114
Dysentery chronica.....	6	0	22	1	10	2	4	0	42	3	1 in 14	6.6
Enteritis.....	0	0	0	0	0	0	9	0	9	0	0 in 9	1.4
Hepatitis acuta.....	1	0	10	0	1	0	3	0	15	0	0 in 15	2.4
Hepatitis chronica.....	1	0	8	0	2	0	5	0	16	0	0 in 16	2.5
Obstipatio.....	91	0	195	0	184	0	80	0	550	0	0 in 550	87
All other diseases of this system	157	1	203	1	351	1	166	0	877	3	1 in 292	139
Total -----	435	1	976	2	1874	20	610	3	3895	26	1 in 150	618



## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	5,693		5,841		6,940		6,723		6,299			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica..	15	0	18	1	16	0	17	0	66	1	1 in 66	10.4
Catarrhus.....	669	0	364	0	486	0	484	0	2003	0	0 in 2003	318
Phthisis pulmonalis.....	1	2	3	5	5	2	7	5	16	14	7 in 8	2.5
Pleuritis .....	22	0	22	0	23	0	18	0	85	0	0 in 85	13.4
Pneumonia .....	29	2	15	0	6	0	11	0	61	2	1 in 30	9.6
All other diseases of this system .....	21	0	9	0	10	0	10	2	50	2	1 in 25	8
Total .....	757	4	431	6	546	2	547	7	2281	19	1 in 120	362
Rheumatismus .....	166	0	170	0	163	1	160	0	659	1	1 in 659	104

The only remarks found on the sick-reports relative to the diseases occurring in this region are those already cited, touching the prevalence of remittent and yellow fevers, diarrhœa, and dysentery, at Fort Monroe, in the third quarter 1848. These diseases do not appear to have been marked by any peculiarities.

The catarrhus epidemicus, which we have found to prevail very extensively throughout the northern division in 1843, affected the troops at Forts McHenry and Monroe quite severely in July of that year.

## MIDDLE INTERIOR REGION—EAST.

This region includes all that portion of the United States lying between the immediate Atlantic slope and the Mississippi river, and within nearly the same parallels of latitude which defined the northern and southern boundaries of the middle Atlantic region.

Although only three stations are located in this district, it has been found advisable to present the diseases in two abstracts, on account of the dissimilarity between those prevailing in the region of the Alleghanies and in the valley of the Ohio.

The first abstract will, therefore, present the diseases occurring at Carlisle Barracks and at Alleghany Arsenal; the second, those at Newport Barracks.

## CARLISLE BARRACKS.

This post is situated in a beautiful valley, about midway between the north and south mountain-spurs of the Alleghany range, which are separated here the distance of ten miles. The site of the barracks is as elevated as the general surface of the valley. It is exposed to the N.W. wind coming from the mountains, about five miles distant; but its other aspects are, in a considerable degree, protected by woods, and by the town of Carlisle, situated on a slight eminence, half a mile off. Leitart creek, averaging ten feet in width, has its origin in a spring, two and a half miles south of the town; flows past the garrison, on the N.W., distant about two hundred yards. A small marshy tract of land (the only one in the vicinity) lies north of the barracks some three or four hundred yards. This creek is not confined by well-de-

finer banks; but, at intervals in its course, spreads over considerable tracts of land. Intermittent fever has prevailed, at different times, to a considerable extent, having its origin in the boggy tract along the creek; though, of late years, a majority of the cases reported were in recruits who contracted the disease before joining the post.

No local causes of disease exist in or about the post, unless such as are possibly found in connexion with a tract of low ground, sometimes partially submerged, extending along the whole length of the government line of fence, on the southwest. Sundry cases of intermittent fever have occurred during the quarter, which cannot, with plausibility, be attributed to any other source or origin.

The barracks are old, but unexceptionably good; being built of brick, and finished in a comfortable and commodious way. The same remarks apply to the hospital. The diet of the men consists of the ration, with such moderate supply of vegetables as can be purchased by the company fund, and raised in the post garden.

The water is of good quality, being brought in pipes from the Canadequinet creek. It is slightly impregnated with lime, but not to an exceptionable extent.

The foregoing facts have been obtained from the quarterly reports of Surgeons Finley and Wright.

#### ALLEGHANY ARSENAL

Is at Pittsburg, three miles northeast of the city, and on the immediate banks of the Alleghany river, in a valley of limited extent, surrounded by high hills, which abound in bituminous coal.

This post is remarkably healthy, and the diseases are such as are mainly caused by sudden variations of temperature.

#### NEWPORT BARRACKS

Is on the south bank of the Ohio river, opposite Cincinnati, and at the mouth of Licking river. The immediate site of the barracks is about forty feet above the river at its ordinary stage of water. This has been for many years principally used as a depot for recruits enlisted in the valleys of the Ohio and Mississippi. No special report of its topography has been received.

### DISEASES.

Following the order heretofore pursued in this report, the aggregate amount and ratio of sickness and mortality at Carlisle Barracks and Alleghany Arsenal are presented in the following table, compiled from abstract No. 2 for this division.

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	2,408	1,359	11	564	4.5
Second quarter.....	2,309	1,488	6	644	2.6
Third quarter.....	2,773	2,118	14	763	5.
Fourth quarter.....	2,334	1,420	8	608	3.4
Annual ratio.....	2,456	6,385	39	2,599	15.8
Exclusive of cholera.....		6,373	36	2,594	14.6

The proportion of cases treated to the mean strength, is 259 per cent.; and of deaths, 1 in 63, or 1.5 per cent. The ratio of deaths to the number of cases treated is 1 in 163.70, or 0.61 of one per cent. Exclusive of cholera, the ratio of deaths to the number of men is 1 to 68, or 1.4 per cent.

## FEVERS.

Quarters.-----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength-----	2,408		2,309		2,773		2,334		2,456			
Diseases.	Cases	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris continua communis.....	10	0	11	0	7	0	24	0	52	0	0 in 52	21
Febris intermittens quotidiana..	6	0	20	0	29	0	29	0	84	0	0 in 84	34
Febris intermittens tertiana....	35	0	62	0	52	0	62	1	211	1	1 in 211	85
Febris intermittens quartana...	6	0	3	0	0	0	1	0	10	0	0 in 10	4
Febris remittens.....	18	0	43	0	99	0	37	3	197	3	1 in 66	80
Febris typhus.....	9	1	16	2	3	0	17	0	45	3	1 in 15	18
Febris typhus icterodes .....	0	0	0	0	0	0	0	0	0	0	0 in 0	0
Total-----	84	1	155	2	190	0	170	4	599	7	1 in 85	243

The quarterly reports are almost silent respecting the class of fevers. The prevalence of scarlatina and pertussis is noted in March, 1845, at Carlisle Barracks; and a severe and fatal epidemic of scarlatina in the vicinity of the town of Carlisle, during the summer and fall of 1850, is also reported, but without particulars.

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters.....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength .....	2,408		2,309		2,773		2,334		2,456				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Cholera Asiatica.....	1	0	0	0	11	3	0	0	12	3	1 in 4		
Diarrhoea.....	90	0	213	0	476	0	179	0	958	0	0 in 958	390	
Dysentery acuta.....	9	0	32	0	135	1	34	0	210	1	1 in 210	85	
Dysentery chronica.....	0	0	2	0	2	0	0	0	4	0	0 in 4	1.6	
Enteritis .....	0	0	0	0	4	0	1	0	5	0	0 in 5	2	
Hepatitis acuta.....	0	0	0	0	0	0	0	0	0	0	0 in 0	0	
Hepatitis chronica.....	0	0	1	0	0	0	0	0	1	0	0 in 1	0	
Obstipatio.....	57	0	87	0	88	0	68	0	300	0	0 in 300	122	
All other diseases of this system.....	166	0	93	0	182	2	83	1	524	3	1 in 175	213	
Total .....	323	0	428	0	898	6	365	1	2014	7	1 in 288	820	
Exclusive of cholera.....									2002	4	1 in 500	815	



The Asiatic cholera made its appearance at Carlisle Barracks in July, 1849. Surgeon De Camp remarks:

"The circumstances under which cholera made its appearance at this post have tended very much to convince me that it is a disease of a contagious character.\* The disease was evidently brought here in the person of a recruit,† and the other cases (11 total, 3 fatal) occurred in quick succession. There was a peculiarity in the discharges from the bowels in some of the cases, toward the close of the disease, which I never saw before, viz: instead of rice-water, white mucus, occasionally streaked with blood. The treatment was similar to that which I pursued in 1832, except that I did not use the lancet so freely. Calomel in large doses was my main dependence; dry cupping over the abdomen, sinapisms, dry rubbing with mustard, and external warmth were freely resorted to. There were many cases of suspicious diarrhœa, which might have become cases of cholera, but for early treatment; they were generally relieved by a mixture of tinct. opii, æther, and spts. camphoræ."

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.	
Strength -----	2,408		2,309		2,773		2,334		2,456					
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.				
Bronchitis acuta et chronica ..	30	0	3	0	1	0	14	0	48	0	0 in 48	19		
Catarrhus -----	182	0	133	0	98	0	167	0	580	0	0 in 580	235		
Phthisis pulmonalis.....	2	1	3	0	1	1	0	1	6	3	1 in 2	2.4		
Pleuritis -----	24	0	9	0	9	0	17	0	59	0	0 in 59	24		
Pneumonia -----	13	3	24	1	14	1	7	0	58	5	1 in 11	23		
All other diseases of this system -----	0	0	5	0	0	0	0	0	5	0	0 in 5	2		
Total -----	251	4	177	1	123	2	205	1	756	8	1 in 95	307		
Rheumatismus. -----	66	0	58	1	45	0	52	0	221	1	1 in 221	90		

In regard to the diseases of this system, the original reports of sick are without remark, except a note of the prevalence of epidemic catarrh at Carlisle Barracks in July and August, 1843.

The tables which immediately follow are compiled from abstract No. 3 for this division: one station only—Newport Barracks, Kentucky.

\* For similar views by Surgeon De Camp, see "Statistical Report on the Sickness, &c., in the U. S. Army, 1840," p. 86.—C.

† It is the belief of the compiler that this recruit was transferred from Fort Columbus, New York harbor, where cholera prevailed.—C.

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	1,422	846	19	595	13
Second quarter.....	1,395	957	25	686	18
Third quarter.....	1,455	1,208	20	830	13
Fourth quarter.....	1,546	890	11	575	7
Annual ratio.....	1,454	3,901	75	2,682	51.5
Exclusive of cholera.....		3,670	59	2,524	40.5

The foregoing table shows that the annual ratio of sickness to the strength of the command at Newport Barracks, is 2.68 to 1; and that of deaths, 1 in 19, or 5.1 per cent. It is also deducible from the table that the proportion of deaths to cases treated is 1 in 52, or 1.9 per cent.

If we deduct from the aggregate sickness the 231 cases of Asiatic cholera, and from the mortality the 16 deaths from that disease, the following will be the result: Mean strength, 1,454; number treated, 3,670; deaths, 59. The proportion of sick to number of men, with this modification, is 2.52 to 1; that of deaths, 1 in 24.6, or 4.05 per cent.; and the ratio of deaths to cases treated, 1 in 64, or 1.5 per cent.

## FEVERS.

Quarters. ....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength .....	1,422		1,395		1,455		1,546		1,454				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Febris continua communis.....	1	0	0	0	0	0	0	0	1	0	0 in 1	0	
Febris intermittens quotidiana..	114	0	151	0	180	0	187	0	632	0	0 in 632	434	
Febris intermittens tertiana....	51	0	35	0	30	0	6	0	122	0	0 in 122	83	
Febris intermittens quartana....	0	0	0	0	11	0	3	0	14	0	0 in 14	9	
Febris remittens .....	13	0	34	1	23	0	12	0	82	1	1 in 82	56	
Febris typhus. ....	30	0	18	4	17	1	23	3	88	8	1 in 11	60	
Febris typhus icterodes.....	0	0	0	0	4	0	1	0	5	0	0 in 5	3	
Total .....	209	0	238	5	265	1	232	3	944	9	1 in 105	649	

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	1,422		1,395		1,455		1,546		1,454			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica.....	0	0	95	4	119	10	17	2	231	16	1 in 14	
Diarrhœa.....	67	2	141	0	267	5	147	0	622	7	1 in 89	427
Dysentery acuta.....	9	1	16	2	49	0	21	1	95	4	1 in 24	65
Dysentery chronica.....	1	0	1	0	1	0	0	1	3	1	1 in 3	2
Enteritis.....	2	0	3	0	6	0	2	0	13	0	0 in 13	8
Hepatitis acuta.....	0	0	2	0	0	0	1	0	3	0	0 in 3	2
Hepatitis chronica.....	3	0	1	0	0	0	0	0	4	0	0 in 4	2
Obstipatio.....	30	0	31	0	48	0	26	0	135	0	0 in 135	92
All other diseases of this system..	47	0	50	2	80	0	31	1	208	3	1 in 69	153
Total .....	159	3	340	8	570	15	245	5	1314	31	1 in 42	903
Exclusive of cholera.....									1083	15	1 in 72	744

CHOLERA.—In the report from Newport Barracks, for the quarter ending June 30, 1849, Surgeon Finley makes the following remarks: "It will be seen by this report, that there have been sixty-six cases of Asiatic cholera under treatment; these were, even the mildest, characterized by the discharges peculiar to that disease; the doubtful cases 'of diarrhœa' have been placed under the head of diarrhœa. The treatment in every case which has occurred since my special report, has been that laid down in that report—the free exhibition of calomel and camphor, and the quinine after reaction was fairly established."

The report of Surgeon Finley thus referred to, is dated "Newport Barracks, Ky., June 14, 1849," and is as follows:

"I consider it my duty, under existing circumstances, to anticipate my quarterly report, so far as to give an outline of the treatment and its results of the only two cases of Asiatic cholera which have been under my charge.

"Recruit ———, a musician of intemperate habits, was confined in the guard-house on Wednesday for drunkenness; he was released on Saturday morning, and in the evening of that day was attacked with diarrhœa; but no report was made of his situation, although an order requiring such report by the patient, or the non-commissioned officer in charge, immediately upon the appearance of such symptoms, had been issued. This diarrhœa continued until the next day, between 4 and 5, p. m., when he was accidentally discovered in his bunk by my steward and conveyed to the hospital. I saw him immediately, and found him in the stage of collapse; no pulse perceptible in the radial artery; skin cold, corrugated, and covered with profuse perspiration; spasms of the muscles of the lower extremities; cold, white tongue; serous discharges per anum et orem. The treatment: Large sinapisms over stomach and bowels; spinal irritations, by applying a strip of flannel saturated with spts: terebinthinae over the entire vertebral column, and passing a hot smoothing-iron on it. (This appeared to relieve the muscular spasms immediately). Calomel, grs. xx; camphor, grs. x; opium, gr. j; was given every hour till the arterial action was excited, then every two hours till five doses were taken. For some time I had hopes of his recovery; but though the heart's action was for a time increased and sustained by stimulants (carbonate of ammonia and brandy), he died the next day by asthenia.



"Second. Recruit —, a man of temperate habits, brought to hospital. His bowels had been more or less disordered for three days; had taken some medicine; what it was, I did not learn. Symptoms: Great prostration; pulse in the radial artery scarcely discernible; husky voice; cold, clammy skin; tongue white and cold; serous discharges per anum et orem. The treatment in this case was the same as in the preceding, with the following exceptions: Opium was not exhibited. After arterial action was in some degree restored, I gave twice, with the calomel and camphor, ten grains of the sulphate of quinine; and with the next dose of calomel and camphor, five grains of quinine; making twenty-five grains of quinine in four hours. My chief attention was directed to sustain the heart's action, and prevent death by asthenia, till the nervous system should be restored to its tonic state, and, with that, the normal condition of the secreting organs. The serous discharges continued at intervals of from three to five hours, for twenty-four hours; the calomel and camphor in varied quantities being given after each discharge, when the patient for the first time (during his treatment) passed about half an ounce of high-colored urine (this secretion having been totally suppressed), followed in a short time by a dejection, evidently the effect of the calomel. From that time his recovery commenced. I was induced to omit the opium in this case, by the consideration that it contributed to the atony of the nervous system, and counteracted the effect of the nervous tonics, quinine and camphor. I have treated the disease in its incipient stage of diarrhœa with calomel and camphor alone, with uniform success. I will mention that, in the second case, spinal irritation was made as in the first, and there were no spasms or cramps. In both cases creosote was given to check emesis, and apparently with good effect. The quantity of calomel varied from half a drachm to ten grains; the camphor from two to ten grains; the evidence of improvement being the lengthened intervals between the discharges and the diminution of quantity. The thirst in both cases was excessive, for which ice and ice-water to a limited extent was allowed."

In addition to the 66 cases of cholera treated by Surgeon Finley in the second quarter, 1849, 19 occurred in the succeeding quarter; making a total of 85, of which 5 proved fatal; being 1 death in 17 cases.

Cholera again made its appearance at Newport Barracks in September, 1851. In the reports for that and the following quarters, 85 cases are reported, 9 proving fatal. These cases were treated by Assistant Surgeon B. M. Byrne, who makes the following remarks respecting them, in his report dated September 30, 1851:

"The cholera made its appearance in this garrison on the 22d September, and nearly all the cases here reported (73) occurred within four days subsequent to its incursion. It had been prevailing on Licking river, in the vicinity of this garrison, for some weeks previously; and, although I have not been able to trace it, but little doubt can exist that it was from there it was introduced. The disease has, within the last few days, begun to spread through the city of Newport, the first cases having occurred in the vicinity of the barracks. In every instance which proved fatal, the patient had, through neglect to report in time, reached the stage of collapse before entering the hospital. Owing to the great difficulty in getting the men (recruits) to report, during the premonitory stage of the disease, the cases were generally of a severe character. But few entered the hospital before they had reached the spasmodic stage; and several of those now convalescent were badly collapsed. Calomel was the main remedy resorted to in the treatment of the disease. It was administered in scruple and half-drachm doses, combined with ten grains of camphor, and repeated after each evacuation, till bile appeared in the stools. In some instances, more than 300 grains had been exhibited before this result was obtained; but in every instance, except one, in which bile was restored to the passages, the patient convalesced. As auxiliaries to this treatment, dry heat, occasional opiates, carbonate of ammonia, brandy, mercurial frictions, mustard-plasters, blisters, &c., were employed."

In May, 1852, cholera again appeared at Newport Barracks. The first case, says Dr. Byrne, occurred in a recruit, who had recently come up the Ohio river in a boat on which cholera had

prevailed. In May and June, 19 cases were successfully treated by Dr. Byrne, which, with 85 the previous year, makes a total of 104; of which 9 died, being about 1 death to 12 cases.

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters. ....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	1,422		1,395		1,455		1,546		1,454			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica	19	0	11	0	6	0	10	0	46	0	0 in 46	31
Catarrhus.....	96	0	21	0	14	0	74	0	205	0	0 in 205	141
Phthisis pulmonalis.....	1	1	3	2	1	1	0	0	5	4	4 in 5	3.4
Pleuritis.....	17	0	12	0	13	0	14	1	56	1	1 in 56	38
Pneumonia.....	68	4	23	2	1	0	29	0	121	6	1 in 20	83
All other diseases of this system.....	2	0	3	0	4	0	3	0	12	0	0 in 12	8
Total .....	203	5	73	4	39	1	130	1	445	11	1 in 40	306
Rheumatismus .....	22	0	25	0	16	0	17	0	80	0	0 in 80	55

## MIDDLE INTERIOR REGION—WEST.

The region thus designated for the purposes of this report, embraces that portion of country lying between the Mississippi and the eastern slope of the Rocky Mountains, and the thirty-sixth and fortieth parallels of north latitude.

The military stations which have been or are now occupied in this region are six in number, viz: Jefferson Barracks, St. Louis Arsenal, Forts Leavenworth, Scott, Atkinson, and Riley.

Jefferson Barracks having been occupied as a depot for recruits, and being also peculiarly located in reference to its medical topography, it has been determined to present the diseases occurring there, and at St. Louis Arsenal, which is in its vicinity, in a separate abstract, and to classify the diseases of the remaining four posts together.

## MEDICAL TOPOGRAPHY AND DISEASES OF JEFFERSON BARRACKS AND ST. LOUIS ARSENAL.

Compiled from reports by Surgeon S. G. I. De Camp: 1839-'40 and '56.

## JEFFERSON BARRACKS.

Jefferson Barracks is situated on the right bank of the Mississippi river, ten miles below the city of St. Louis, upon a sloping ridge, elevated about 100 feet above the river, and distant from it about 150 yards. The ground continues to rise gently for one mile west of the barracks, attaining an elevation of about 200 feet above high-water mark. The surface of the earth for many miles south and west, and for four or five miles north, is undulating; and as it frequently rises into abrupt hills with deep ravines, the drainage is perfect. The soil is a rich loam, based upon clay, with a substratum of limestone. The country around, with the exception of



the public grounds, remains (1839) covered with a heavy growth of timber. Indications of lead are common, and stone-coal is found in abundance within a few miles of the post.

The river is about one mile wide, and upon the opposite side, in Illinois, is the great "American bottom," which is said to be sixty miles long, and, on an average, seven miles wide. On the river it is skirted with forests, varying in breadth from a half to one mile, whilst the remaining space to the high ground consists principally of prairie, covered with a luxuriant growth of grass. This prairie is chequered with numerous lakes; and as the evaporation of the water during the latter part of the summer exposes the surface of the subjacent soil, a fruitful source of disease is engendered, the influence of which is sensibly felt at the barracks. The water used at the post is usually that of the river; but in summer it has been common to resort to wells and springs, the waters of which are prejudicial to health, causing, in many persons, bowel complaints.

The buildings used as barracks are built of stone, and occupy three sides of a square. They were erected in 1827, and were calculated to accommodate twenty-two companies, under the organization of that period, including store-rooms, offices, and mess-rooms. The position, with regard to health, is as good as any which could have been selected upon the river bank; but, from an acquaintance with the diseases of this country for more than twenty-two years, I am able to state that fewer cases occur, and, when they do, they are much milder in their character, when removed from the river. At least three-fourths of the persons at this post have had fever this season (1839); while at the distance of one mile from the river, a dense forest intervening, there has scarcely been a single case.

#### ST. LOUIS ARSENAL.

St. Louis Arsenal is situated within the incorporated limits of the city, in latitude  $38^{\circ} 37' 28''$ ; longitude  $90^{\circ} 15' 16''$ . It is elevated above the Mississippi, at an ordinary stage of water, about 12 feet. The main channel of the river runs east of the arsenal grounds about half a mile, an island intervening, and a small channel, which, at times, has but little water in it, leaving exposed a broad surface of a muddy deposit, covered to a considerable extent with decayed wood, brought by each rise of the upper rivers from the wood-drifts. Being situated at the lower end of a large city, where great numbers of dead animals are thrown into the river, not a few of them are deposited in the vicinity of the arsenal when the river is low. In addition to the above causes of disease, a little below the arsenal, on the opposite side of the river, there is a chain of lakes, which in midsummer become very low, leaving large tracts of muddy ground exposed to the action of the sun. All these causes are fruitful sources of malaria, producing fever of an intermittent type. From long residence in this vicinity, I am convinced that when the east and southeast winds prevail, these causes are made operative to a considerable extent. Elevation above the river, especially if a little removed from it, tends to a great extent to render the above causes inoperative. Persons residing in the rear of the arsenal, on high ground, are seldom attacked with chills and fever.

Persons who have recently come to reside at the arsenal, from distant parts of the country, are subject to this disease; and the family of the present commanding officer is proof of this, as several of its members have been afflicted with it.

The enlisted men, whose duties are very much under cover, and who have been living at the arsenal for a length of time, are not particularly subject to it.

I am fully persuaded that the arsenal is in an unhealthy position, and, should the government ever feel disposed to occupy any other, whether for health or for other reasons, any place south of St. Louis, in St. Louis county, seventy feet or more above the river, will give a guaranty for much better health than can be found at the arsenal; and if thrown back one-half mile at that elevation, the immunity from disease will be greatly increased.



## DISEASES.

The following table, compiled from abstract No. 4 of this division, exhibits a summary of the amount of sickness and mortality at these two stations:

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	5,525	3,908	90	707	16
Second quarter.....	4,232	4,545	94	1,073	22
Third quarter.....	6,245	5,761	129	922	20
Fourth quarter.....	6,320	5,741	80	908	12
Annual ratio.....	5,580	19,955	393	3,576	70
Exclusive of cholera.....		19,587	263	3,510	47

It is here shown that the annual proportion of sickness to the mean strength of the command is 3.57 to 1; the ratio of deaths to the number of troops 1 in 14.4, or 7 per cent.; and the proportion of deaths to the number of cases treated 1 in 51, or 2 per cent. Exclusive of cholera, the proportion of deaths to persons is 1 in 21, or 4.6 per cent.; and to the number of cases treated 1 in 74, or 1.34 per cent.

## FEVERS.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	5,525		4,232		6,245		6,320		5,580			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris congestiva -----	7	7	1	1	6	6	8	6	22	20	10 in 11	4
Febris continua communis -----	2	0	7	0	12	0	6	0	27	0	0 in 27	5
Febris intermittens quotidiana -----	318	0	527	0	662	2	625	0	2132	2	1 in 1066	382
Febris intermittens tertiana -----	435	0	423	2	10	0	868	0	2536	2	1 in 1268	454
Febris intermittens quartana -----	6	0	9	0	2	0	1	0	18	0	0 in 18	3
Febris remittens -----	33	1	39	2	174	10	96	7	342	20	1 in 17	61
Febris typhus -----	10	1	13	1	13	4	19	0	55	6	1 in 9	10
Febris typhus icterodes -----	0	0	3	0	1	0	2	1	6	1	1 in 6	1
Total -----	811	9	1022	6	1680	22	1625	14	5138	51	1 in 100	920

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	5,525		4,232		6,245		6,320		5,580			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica.....	81	39	80	49	196	34	11	8	368	130	1 in 2.8	
Diarrhœa.....	471	7	999	7	1262	37	1042	11	3774	62	1 in 61	676
Dysentery acuta.....	136	0	241	2	384	9	182	8	943	19	1 in 50	169
Dysentery chronica.....	58	1	89	1	32	1	15	7	194	10	1 in 19	34
Enteritis.....	1	0	0	0	0	0	1	1	2	1	1 in 2	0.4
Hepatitis acuta.....	1	0	4	0	4	0	0	0	9	0	0 in 9	1.5
Hepatitis chronica.....	0	0	2	0	2	0	8	2	12	2	1 in 6	2
Obstipatio.....	80	0	164	0	196	0	178	0	618	0	0 in 618	110
All other diseases of this system -----	164	2	111	1	148	0	182	2	605	5	1 in 121	108
Total -----	992	49	1690	60	2224	81	1619	39	6525	229	1 in 28	1169
Exclusive of cholera.....									6157	99	1 in 62	1103

In regard to the foregoing table, the prevalence of an epidemic dysentery in September, 1840, at Jefferson Barracks, and the occurrence of epidemic cholera in 1849-'50-'51-'52, and '54, are to be noted.

In 1849, the first case of cholera occurred on the 22d of January. The patient sickened in St. Louis, but died at the barracks. After this, says Surgeon Wheaton, "one or two cases occurred daily for a time, but soon became more frequent. After ten or twelve days the disease began to decline, and ceased on the 27th March" (83 days). No one treatment appeared more successful than another after the stage of collapse. Eighty-one cases are reported (exclusive of women and children), 11 terminating in death. This disease reappeared in May following. Cholera again visited Jefferson Barracks in June, 1850, continuing till some time in August, the precise date of cessation not reported. In June, 1850, this disease occurred at St. Louis Arsenal. The medical officer there, Assistant Surgeon Abadie, remarks: "Since the commencement of May, very unmanageable cases of cholera have been observed in St. Louis. At the arsenal a good deal of diarrhœa prevailed among the men. One well-marked case of cholera is reported. The usual treatment pursued by me in such cases, viz: large doses of calomel, camphor, with a little opium given until biliary evacuations were produced, together with frictions with dry mustard, proved successful."

In June of the next year (1851) we once more find cholera at Jefferson Barracks, ceasing this time in July; and again in April, 1852, ceasing in May. In March, 1854, a few cases are reported, and the disease appears to have continued to affect the garrison until November following. The average proportion of deaths to cases was about 1 in 3.

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	5,525		4,232		6,245		6,320		5,580			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica..	19	1	11	2	4	0	35	1	69	4	1 in 17	12
Catarrhus -----	690	0	410	0	485	1	765	0	2350	1	1 in 2350	421
Phthisis pulmonalis.....	7	5	4	2	9	10	3	4	23	21	21 in 23	4
Pleuritis -----	53	4	41	3	17	1	51	3	162	11	1 in 15	29
Pneumonia -----	42	8	17	7	3	0	57	11	119	26	1 in 4	21
All other diseases of this system	6	1	5	0	6	0	6	1	23	2	1 in 11	4
Total. -----	817	19	488	14	524	12	917	20	2746	65	1 in 42	492
Rheumatismus -----	139	0	158	0	104	0	132	0	533	0	0 in 553	99

The epidemic catarrh, so frequently noted in this report, prevailed at Jefferson Barracks in July, 1843.

We now proceed to the consideration of the topography and diseases of the remaining posts in this region; and, first, of

## FORT LEAVENWORTH.

This post is situated on the right bank of the Missouri river, about 500 miles above its confluence with the Mississippi. As the Missouri here is not more than 300 yards wide, being one of its narrowest points, the water is deep and the current rapid. This mighty river is at times navigable for steamboats 1,750 miles above the fort, and always, unless obstructed by ice, to its mouth.

This fort stands on a plain elevated about 150 feet above the surface of the river. This plain is the highest point of an undulating prairie, which extends as far south as the eye can reach. The opposite shore is an extensive alluvial bottom, covered with a dense forest of cottonwood (*populus Canadensis*). The margin of the river, north of the fort, presents a similar character; but, as the prevailing winds are from the south, the full effects of the exhalations from this miasmatic surface are not experienced.

The soil, which is quite productive, consists of a sandy loam, covered with a rich vegetable deposit, the whole based on a stratum of clay and limestone.

"The forest," says Surgeon Macomb, "abounds in trees valuable for fuel or timber. With the exception of the pine, almost all kinds are to be found. The most common are the *juglans nigra*, *carya oliviformis*, *carya alba*, *acer saccharinum*, *acer negundo*, *platanus occidentalis*, *cerasus Virginiana*, *morus rubra*, *quercus alba*, &c."

## MEDICAL TOPOGRAPHY AND DISEASES OF FORT SCOTT.

By Assistant Surgeon Joseph K. Barnes : 1852.

Fort Scott was established in the spring of 1842, by the removal of the garrison from Fort Wayne, Cherokee Nation. The position selected for the encampment, and subsequent site of the post, is in latitude 38° N., longitude 17° 30' W. of Washington: four miles west of the



Missouri line, and upon the military road from Leavenworth to Gibson. The nearest point on the Missouri river is ninety-five miles N.N.E. The general features of the country are those of a high table prairie, intersected by well-wooded water-courses, at intervals rarely exceeding ten miles, and cut by limestone ravines, which, ordinarily dry, are sometimes the beds of immense torrents. The streams of the section between the Kansas river, ninety-three miles north, and Spring river, fifty-five miles south, are tributaries of the Osage, and preserve generally an easterly course, until forming that river, which flows southeast to join the Missouri.

The immediate site of the post is a flat spur of high prairie, running from S. to N., bounded on the N.W. by the Marmiton river, and on the N.E. by a small, clear-water creek, joining the Marmiton within a short distance of the spur. This plateau opens out rapidly to the south in a beautifully undulating prairie; while to the west, north, and east, it terminates abruptly in an almost precipitous descent of fifty feet to the river and creek bottoms. These bottoms, fifteen to twenty feet above the usual water-level, are heavily timbered, and vary in width from one quarter to one mile, opening again on high prairie, which, to the west and east, runs up into limestone ridges, averaging forty feet more elevation than the land to the south or north. The soil is a dark chocolate-colored loam, with much granular limestone detritus, but little clay, no silicious sand, retaining moisture but a short time, and, when dry, very hard and compact. The prevailing geological formation is limestone, which is found bare on the ridges, in the ravines and beds of streams, and at depths from six inches to six feet in the prairie-valleys and river-bottoms. Bituminous coal, shale, and grey sandstone are also found. Occasionally small spots of timber are met with on the prairie; but, as a general rule, this growth is confined to the borders of the streams, and consists of the *juglans nigra*, *platanus occidentalis*, *morus rubra*, *alnus Americana*, *acer saccharinum*, and *quercus alba*, *rubra*, *nigra*, *aquatica*, and *macrocarpa*, the *tilia Americana*, and the *juglans alba*, some of which attain great size. The bottoms are also covered with a luxuriant undergrowth, composed principally of the *cercis Canadensis*, *amelanchier Canadensis*, *hamamelis Virginica*, *laurus benzoin*, *sambucus nigra*, *ribes grossularia*, *rosa Carolina*, *rubus odoratus*, *rubus villosus*, and *vitis aestivalis*. The *juniperus Virginiana* is found twenty, and the *pinus sylvestris* sixty miles south of us. The fauna of this region was originally extensive, but the commercial demand for furs and peltries has caused their almost entire extinction by Indians and trappers. The birds are those of the middle States, with the addition of the pinnated grouse (*tetrao cupido*), which exist in great quantities. Reptiles and insects, both noxious and innocuous, abound both upon the prairie-ridges and river-bottoms.

Owing to the physical conformation of the country, the climate is one of extremes of heat and cold, of dryness and moisture. After a long and debilitating summer, the winter, most frequently commencing abruptly with cold storms from the northeast, is a succession of alternations, the mercury falling or rising 30° to 40° in a few hours. Springs and wells supply an abundance of good water, which rarely fails, even in the dryest seasons. Extensive gardens, although sometimes failing in articles intended for winter use, have always afforded a sufficiency of esculents during the spring and summer. The quarters are exceedingly roomy, well ventilated and comfortable, and, with the necessary out-houses, are furnished with good drainage, preventing all accumulations of water and filth; the general arrangement of the post being such, that any inattention to police would at once become apparent.

An accurate examination of the country, for several miles in each direction, has failed to discover any local feature which may be considered objectionable, or as remotely the cause of disease. There are no grass-ponds, swamps, or lakes near us; the streams are numerous, but without stagnant pools; the bottom-lands extensive, and sometimes overflowed, but they drain as rapidly and thoroughly as the prairies.

The medical records of Fort Scott, from May, 1842, to January, 1849, exhibit an aggregate of 3,415 cases, in a command of 3,034 men—a proportion of 1.12 to 1. Of these, 1,717 were malarious fevers; which, deducting 467 surgical cases, gives a proportion of 1.38 to 1, or more than one and one-third per cent. over all other diseases. But 8 cases of remittent are recorded,

the remaining 1,709 being intermittent, either quotidian, tertian, or quartan. This proportion varies with the different quarters of the year, and with different years; being much greater during the third and fourth than the first and second quarters, and in the years 1843 and 1845 than any others. The next in point of numbers, and by far the most serious in result, are diseases of the respiratory organs, which constitute 331 in 1,241, or more than one-fourth of the cases, after deducting the malarious and surgical. This proportion varies with different years, and is influenced by unimportant epidemics of catarrh and influenza, but maintains a marked increase during the first and fourth quarters of each year, pneumonia being the most frequent and dangerous form. Of the 910 cases not already specified, 287 were diseases of the digestive organs, principally diarrhœa, colica, and obstipatio, with an occasional case of hepatitis and dysentery. The second quarter of each year furnishes the greater portion of these cases; owing, doubtless, to the abundance of vegetables obtainable at that season. Recruits newly arrived occasionally complain of the laxative effects of the well and spring water, but this soon passes off; and were it not for errors of diet and intemperance, these affections would be still more unfrequent. In this connexion, it is worthy of remark, that, although spasmodic cholera has prevailed within fifty miles both north and south of this point, not a single well-marked case has existed here. Diseases of fibrous and muscular tissues have also prevailed to a greater extent during the second quarters; of the whole number (133), 51 occurring during the months of April, May, and June. These months include the usual rainy season; and diseases excited by the blustering winds of March, are fully developed during the cold easterly storms of April. Of 77 cases of diseases of the brain and nervous system, a majority are referrible to habits of intemperance. One of the fatal cases of meningitis is directly ascribed to this cause. Exposure to the sun upon the open prairie should also have its due importance, although many of the cases of cephalalgia were doubtless owing to simple gastric derangements. With but few exceptions, the 45 cases of disease of the urinary and genital organs were venereal, primary syphilis, and gonorrhœa. Of the remaining 368, were fourteen cases of eruptive fevers (non-contagious), and two of serous and exhalent vessels; leaving 352 not admissible under either of the foregoing classes, and comprising under the caption of "all other diseases" many of a specific character; as ebrietas, toxicum, scirrhus, scorbutus, debilitas, amaurosis, &c., &c. The surgical cases are divided into 145 of abscess and ulcers, and 322 of wounds and injuries.

During the six years and nine months included in these statistical details, seventeen deaths have occurred—six of which were accidental, and not affording opportunity for medical treatment; one drowned; one frozen to death; one found dead from intoxication; two of gun-shot wounds, immediately fatal; and one stabbed and beaten to death. Of the entire number of cases treated, eleven terminated fatally, viz: four of phthisis pulmonalis, one of pleuripneumonia, three of pneumonia, two of meningitis, and one of apoplexia; making the proportion of deaths under treatment one in three hundred and ten and forty-five hundredths (1 in 310.45).

But few facts concerning the vital statistics of the Osages, the tribe of Indians occupying the country to the west of this post, can be collected. The traders remain but a few years among them, the agents are frequently changed, and the intelligence of a half-breed will not carry him back beyond a single hunting season. They are essentially a nomadic race, moving from point to point as their wants compel, and preferring a precarious dependence upon the chase to agricultural pursuits. Their usual hunting seasons are the early summer and winter, when they go upon the plains in pursuit of buffalo. Improvident and wasteful, a successful hunt is but an inducement to feasting and gluttony, and, upon their return to the villages and trading stations, but few have made sufficient provision for the winter. The skins procured on the summer hunt are disposed of for flour, corn, coffee, sugar, &c., &c., when they again start out for the second or winter hunt, which is principally for furs, although they also frequently obtain buffalo. By spring, the proceeds of this hunt are disposed of, and they sometimes suffer for want of food before the grass is high enough for another foray. The history of one year is that of many—wasteful plenty and intemperance to-day; want, sickness, and misery to-morrow.



Of all the frontier tribes, the Osages, originally neither brave nor warlike, would seem to have suffered most from association with the whites; for, with hardly an exception, they are notoriously intemperate, and will deprive themselves of the actual necessities of life to procure whisky. Filthy in their persons, irregular in their habits, continually subjected to the extremes of excess and want, it is not surprising that most diseases assume an unwonted malignancy and fatality among them. Sooner or later in the autumn—and the less successful their spring hunt, the sooner and more severely—diarrhœa, intermittent, remittent, and bilious fevers appear. Diarrhœa and dysentery are the almost invariable consequence of an unfortunate hunt; for, in this event, they betake themselves to the fields of the half-breeds and their frontier neighbors, devouring unripe corn, melons, and pumpkins, stripping the bushes of green haws and berries, and searching the bottoms for roots, which necessity has taught them are edible. Deficient nutrition produces its effects as surely in the Indian wigwam as in the hold of an emigrant ship or the over-crowded lanes and alleys of a city. Intermittent fever becomes pernicious or congestive; remittent and bilious fevers, typhoid; and diarrhœa, merely a symptom of a graver disease. The advance of the season finds them poorly prepared; the cold storms of winter are but feebly resisted; imperfect calorification predisposing to pulmonary engorgements, pleuritis and typhoid pneumonia are added to their list of evils. In 1845, the Osages numbered about 6,000: in 1851, 5,000: at the enrolment of 1852, it is expected, by those best informed on the subject, that this will be reduced to 3,500. Epidemics of eruptive fever have prevailed, but at intervals so remote that it is impossible to gather any correct data of their history, character, and result. During the past winter and spring, an epidemic of typhoid measles has more than decimated the tribe.

The adjacent country to the east, and within the State of Missouri, presents similar physical aspects to that of this immediate vicinity. It is but sparsely settled by agriculturists, who merely cultivate enough land to supply themselves and families with the bare necessities of life. For the convenience of wood and water, their log cabins are placed upon the banks of streams, or the nearest ground not subject to overflow. Clearings are rarely made; their farms, in most instances, running along the edge of timber into the prairie. Ignorant, without energy, industry, or foresight, the population is principally composed of those whom cheap and rich lands have drawn from the older States, and whose only aim is an easy life—another term for a midway course between idleness and starvation, or labor and abundance. Being but indifferently sheltered, insufficiently clothed, and by no means generously fed, they resist disease badly, and climatic vicissitudes, endemial epidemics, or contagious fevers, which would be comparatively unimportant among the troops, assume an alarming consequence with them. The winter months are considered the most unhealthy; typhoid pneumonia (known as *the winter fever*) being the prevalent and important disease, and, as they are dependent upon steam doctors and patent medicines, it generally terminates fatally.

The records of the post showing so great a proportion of malarious fevers, an explanation is required of the statement that no appreciable *local* cause for them can be said to exist in this vicinity. This explanation may be found in the history of the occupations, habits, and exposures of the troops; the meteorological conditions of the seasons when most prevalent; and in what I conceive to be the general characteristics of rich prairie country.

From the occupation of the post until late in November, the command was in tents, and every available man was engaged upon fatigue duty, being employed in the erection of temporary log buildings. Assistant Surgeon Simpson, in reporting the medical topography of the post (June, 1842), says: "The only cause of sickness I can see will be the employment of the men on fatigue duty in the rich bottom-lands immediately on the river. But diseases arising from this cause must be diminished in proportion as the land is cleared and cultivated." In the last quarter of 1842, 116 cases of intermittent are reported, with the remark by Assistant Surgeon Walker, that "the exposure of the men on fatigue duty in the bottoms must account for the greater prevalence of intermittent fever than might be expected." During the first quarter of 1843,



70 cases of intermittent, and 47 of catarrh, are reported; Dr. Walker accounting therefor "by the unusually severe weather, and the exposure of the command in various ways to it." In the second quarter, 83 cases of intermittent are reported, although the command was reduced by the departure of one company of dragoons for the plains. Dr. W. remarks: "The fatigue duties of the command must be considered the indirect cause of a large proportion of the fevers and diseases of the respiratory system; at the same time, it is difficult to say whether this produces a greater amount of disease than the abuse of ardent spirits, and the exposure undergone in procuring it." On the 25th July the dragoons returned from the plains, and by the 30th September the number of cases of intermittent had increased to 159; an epidemic of influenza also prevailed, assuming an intermittent type. During this quarter 12.79 inches of rain had fallen. Although 127 cases of intermittent are reported during the fourth quarter, a majority of them were relapses on the seventh, fourteenth, and twenty-first days; the air was becoming purified by the prairie-fires, and but 5.46 inches of rain had fallen during the three months. On the 31st March, 1844, only 42 cases of intermittent are reported; the men were still constantly engaged on fatigue duties in the bottom-lands; but a temperance reform had been started, and much of the night exposure was thus done away with. During the second quarter, "the men have been very much exposed to rain, which has fallen in unusual quantities," and the number of intermittents was 73—the weather being remarkably dry and mild during the remainder of the year; and, until June, 1845, the proportion of malarious fevers was greatly reduced. The annual rains did not set in until late in June, and in September Doctor Walker reports: "Intermittent fevers constitute three-fourths of the cases occurring during the quarter; 114 have occurred in September: they have also been unusually prevalent throughout the country around us; but the circumstances of the companies have increased it still more with us, as they have been, previous to their arrival here, living upon commissary rations; here, they indulged in a variety of vegetables, melons, green apples, &c., to an unlimited extent." By this time, most of the permanent works were completed; the fatigue duties were less arduous, and the men were very comfortably quartered. The spring of 1846 was very dry, the rains not commencing until July, and a healthy season was predicted; but the reports of the third and fourth quarters show a proportion of seven-eighths of intermittent to all other diseases. From this time a gradual decrease appears, until, in the last quarter, 1848, the proportion was only one-twentieth of all other diseases.

Did the medical history of Fort Scott terminate here, the above remarks might be considered amply explanatory of the prevalence of malarious fevers. The large amount of timber cut for building purposes, leaving the bottom-lands covered with immense quantities of decaying vegetable matter—the duties of the troops requiring unusual exposure to the sun and rain in the midst of its exhalations—would appear to predispose to such affections; and the prediction that these diseases would diminish in frequency with the completion of the post, would seem to be verified. But this is not the case. After an interval of some years, malarious fevers again appeared, and, during the third quarter of 1851, reached the proportion of two hundred and fifty per cent. to all other diseases. They also prevailed to an extent hitherto unknown throughout the surrounding country. So intense was the malarial influence, that no one escaped, no precautions were of avail; the youngest infant, as well as the most robust adult, was affected; and all other forms of disease were influenced and modified by it. Epizootics appeared; in some districts hundreds of young cattle, in others all the horses sickened and died, with every appearance of sudden and violent congestion. The circumstances which had been considered prolific causes of disease in previous years, had ceased to exist; the troops were but little exposed: their fatigue duties were light, and did not require them to be in the woods or bottom-lands more than an hour or two, occasionally; the emigration into the country was small, and but few new farms were opened. We must, therefore, look to other than these causes for an explanation, which I believe can be found to exist in "the general characteristics of rich prairie lands, and the influence of different seasons upon them." It will

be found, although the different varieties of gramineous plants are considered the usual growth of prairies, that, in some sections, these are almost entirely crowded out by a stronger and larger growth of other species. The richer the soil, the greater the predominance of the latter growth—amounting, in some instances, to an almost entire exclusion of the grasses: so that, in the language of the country, a distinction is made between grass prairies and weed prairies: the latter being the character of much of this section of country. This distinction is not confined to any one locality; it is noticeable in Texas, where the difference between the mesquite-grass prairies of the west, and the weed prairies nearer the coast, is quite as decided in salubrity as in vegetable productions. It will be found, also, throughout the vast extent of uncultivated lands, lying upon our western and northwestern frontiers, that the rains are periodical, occurring, for the most part, in spring and winter; the intermediate times being comparatively dry.

The time of the spring rains affects the growth of these prairies much more than the quantity, and upon a supply of moisture at a certain period the vegetation of the year will principally depend. In an ordinarily productive and healthy season, the spring rains commence in April, and do not continue beyond the middle of May; the weeds and grasses shoot up rapidly, are fully matured in July, desiccation commences in August, and in September the horizon becomes smoky from numerous fires, which, extending, sweep off the greater portion of the year's growth. Should, however, the spring rains not set in until June or July, the weeds will have withstood the drought better than the grasses, and will then start into rank luxuriance, the prairies remain green until late in the fall, and the winter rains commence before desiccation is completed, or the surface burned over. That the growth, as well as the decay of this vast amount of vegetable matter, spread over the entire region so controlled, generates a malarial influence, either by the evolution of miasma, or, as is most probable, by the development of organic germs (cryptogamous growths in such seasons being inconceivably abundant), can hardly be questioned. The epidemics of 1843, 1845, and 1851 commenced while the prairies were still clothed with verdure, and reached their acme before decomposition was established; the striking feature of resemblance in these seasons being the lateness of the spring rains. Summer showers, and the longer rains of September and October, can have but little influence upon this production, although undoubtedly increasing the liability to a recurrence of attack. Their effect upon the soil and water-courses is very temporary; and by removing quantities of leaves and other debris, should be rather beneficial than otherwise. The deductions from these observations are in accordance with the experience of the oldest residents of the country, who (without recognizing their mode of action) look to the early commencement of the spring rains as the harbinger of a healthy summer and fall, and *vice versa*.

A marked relation may be observed between the prevalence of diseases of the respiratory organs, and the pre-existence of malarious fevers. Among the country people, a severe winter following upon an epidemic of intermittent, produces much mortality; for either through the debilitating effect of long exposure to malarial influences, or a predisposition induced directly by them, pneumonia, pleuritis, and pleura-pneumonia usually assume a typhoid form.

Were it possible to institute a statistical comparison between the sickness and mortality of the troops, and an equal number of persons in any portion of this country, I am convinced that, making the fullest allowance for the superior comforts of the former, the advantages of discipline, strict police, and prompt medical attendance, the difference in their favor would be so striking as to clearly indicate the greater healthiness of location, and the entire absence of any purely local cause of disease.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT ATKINSON.

By Assistant Surgeon Aquila T. Ridgely: 1852.

Fort Atkinson is situated upon the Arkansas river, in latitude  $37^{\circ} 46'$ , longitude  $99^{\circ} 40'$ , twenty-six miles below the "crossing of the Arkansas," and 74.07 miles above the crossing of the Pawnee fork.

The river at this point is about 450 or 500 feet in breadth, from bank to bank. During the



last twelve months, the channel has usually covered the whole bed of the river ; but for a portion of the summer and autumn of 1851 there was no water flowing, save what permeated the sand. In consequence of its frequent rise and fall, the depth of the river cannot be definitely determined ; but at all times since the establishment of this post it has been fordable for horses, and most commonly for wagons ; and since January 1st, 1852, its average depth, in the vicinity of the post, has probably been two feet.

The river-bottom, at and near the post, is about three-fourths of a mile in breadth from bluff to bluff, though it is constantly changing in this respect as we ascend or descend its course.

Stretching out on either side from the valley, are the bluffs, which, upon the north, rise with some regularity and uniformity to the high and rolling prairie beyond ; while, proceeding toward the south, they are far more broken before we attain the summit of the river range. The whole country, for miles in all directions, is one vast prairie, unbroken, save here and there by some small creek, whose banks are sparsely garnished by a few trees of stunted growth. The soil, both north and south of the river-bottom, is sandy in its nature, and exceedingly sterile. The sandy character of the soil is more marked upon the south than upon the north of the river, while upon the latter side a substratum of dense white clay has been found, so hard as to be blasted with considerable success in excavating. The buffalo and the gramma grasses grow upon the hills and high country, whilst the longer and coarser varieties of the meadow flourish in the Arkansas bottom alone. The prairie is well drained by ravines, and is consequently dry, except immediately after a rain or the melting of snow. Small pools may, however, be seen occasionally upon the hills, and very often in the river-bottom.

Various varieties of sandstone may be found within twenty miles of the post. Limestone, producing lime of an inferior quality, is abundant. Specimens of slate have been seen in the vicinity, and iron-ore has been deposited in large quantities about 100 miles towards the east, and, as is said by the Indians, towards the north, upon the Smoky Hill fork of the Kansas.

The banks of the Arkansas, for many days' march from the post, are almost entirely destitute of timber. It is upon the creeks, north and south of the river, that we depend for fuel, which is composed of the following kinds : the cottonwood, the ash, the elm, the hackberry, and the coffee-bean.\* The comparative frequency with which they occur is denoted by the order in which they are mentioned, the cottonwood being by far the most abundant. The wild grape, small bushes of the plum, and the willow, are also met with on the banks of the streams. Among the plants, those which are most numerous are various varieties of the cactus, the thistle, the wild gourd, and the American sunflower.

The animals frequenting the adjacent country are the wild horse, the buffalo, the elk, the deer, the antelope, the prairie hare, the white wolf, the prairie wolf, the prairie fox, the prairie dog, the gopher, the ground-squirrel, the badger, the raccoon, the otter, the beaver, the rattlesnake, and several other prairie snakes ; the horned frog, the toad, the lizard, the mouse, the spider, the grasshopper, and insects of almost every kind.

The birds which I have observed are the eagle, the hawk, the owl, the raven, the buzzard, the meadow-lark, the sky-lark, the dove, the flicker, the swan, the goose, the duck, the plover, the snipe, and the sparrow. In addition to the above, I have seen one robin.

The exact height of this post above the level of the sea is unknown ; but, by comparing it with that of the crossing of the Pawnee fork, as given by Brevet Major William H. Emory, topographical engineers, it is probably about 2,487 feet. In consequence of this considerable elevation, the atmosphere is exceedingly rarified, as is painfully evident in the labored respiration of unacclimated man or beast when in the performance of unaccustomed exercise. It is, moreover, unusually dry, and is almost entirely exempt from those fogs and mists which are so common in more eastern localities. The presence and continuance of high and blustering winds is a characteristic of the place. I believe that sudden and extreme vicissitudes of tem-

\* The name of this last tree I have given as it is known in this country. It is most probably a species of locust ; is tall and slender, and bears a pod some six or seven inches in length, containing seeds about the size of a large chestnut.



perature, as indicated by the thermometer, do not so often occur with us as at more eastern points upon the same parallel of latitude. The heat of summer is tempered by the prairie breeze, and there are few days in winter when intense cold prevails. Since the establishment of the post, the mercury has but rarely risen above  $90^{\circ}$  Fah., and but once as high as  $96^{\circ}.50$ ; it has been below zero but on a few occasions, and never lower than  $-12^{\circ}$ .

In order that a clear and comprehensive view may be had of the diseases usually prevailing at Fort Atkinson, the accompanying table\* has been prepared, which is a synopsis of all the quarterly reports of sick and wounded from this post since its establishment. The diseases which first attract attention, from their position upon the list, as well as from their numerical importance, are intermittent and remittent fevers. With an average mean strength for the eight quarters of 80.62 men, there has been an average of nine cases per quarter of malarious fever. This, though not a very large percentage, is sufficiently so to tend to establish the conclusion that this is a malarious district. As, however, the existence or non-existence of malaria in any given locality is a question not only interesting to the medical world, but deserving the utmost consideration in the establishment of posts, it is desirable that a false impression should not be created. Reasoning from what is known of the habitats of miasmata, their generation could never have been anticipated in a country so circumstanced as this. The conditions supposed to favor their production do not exist. The scant growth of the prairies affords but little vegetable decay. The almost total absence of timber also conduces to this end. Instead of marshes, we have high, and, for the most part, dry prairie, and a river-bottom which is nowhere boggy, and has no extensive pools. Even supposing that pestiferous miasmata were generated, it seems most likely that their accumulation in sufficient intensity to produce disease would be frustrated by the winds which so commonly prevail. As, however, malarious diseases have been known to infect countries destitute of marshes, and whose sandy and barren soil afforded but little vegetation, we might still remain in doubt, had we not a history of the cases which have occurred at the post, to which we may refer.

From the peculiar situation of this post, communication between it and the valley of the Missouri is very frequent. Not only do recruits for the command come to us by way of Leavenworth, but it often becomes necessary to send detachments to that post. Periodical fever is very usual on the Missouri, as it is also at Council Grove, and perhaps other points on the route; and it is almost exclusively in the persons of those who have recently returned from the States that the disease manifests itself. Of a detachment of eight, who had just arrived, I have known seven to be taken with the fever upon the road, or immediately after going into quarters. The exceptions to this rule have been exceedingly rare; and they are divested of much of their importance when we consider the fact that persons who have once been subjects of the disease are liable to its recurrence, even after they have been removed from the foci of infection. The readiness with which the disease yields to appropriate remedies would also go to show that it was not "a native here, and to the manor born."

From a review of these considerations, I think that we may safely draw the following deductions: 1st. That periodical fevers occur at this post; 2d. That they have not their origin in the vicinity; 3d. That they originate in the Missouri valley, or upon the route between the Missouri and Fort Atkinson; 4th. That, from its necessary connexion with the Missouri, any post which may be established upon this route will be liable to malarious diseases.

The next feature in the table which, upon examination, appears worthy of note, is the great frequency of diseases of the digestive organs. With a mean strength of 80.62 men, there are reported 130 cases of these diseases, for the eight quarters, or an average of 16.25 cases per quarter. This is in striking contrast with diseases of the respiratory organs; for, with the same mean strength, there were, for the eight quarters, but eight instances of this latter class, or an average of one case per quarter. I can only attribute this almost entire immunity from intrathoracic disease to the great dryness of the atmosphere which usually characterizes this portion

\* Table omitted, as in other similar cases; see Introduction, page 5.—C.

of "the Plains." I can see nothing in the peculiarities of the location, in itself, calculated to induce diseases of the digestive organs, but rather attribute their occurrence to the habits and mode of life of the men composing the command. Since the establishment of the post, the garrison has been at almost constant labor, whenever the season would permit. The gathering of supplies for the winter, the construction of fortifications, the renewal of falling houses, the exploration of the surrounding country,—these are the duties which, in addition to their regular guard duty, company "D," 6th infantry, has been required to perform. Such employments have exposed them to the unmitigated heat of summer, and thus rendered them liable to abdominal disease upon the first irregularity or imprudence in diet. Accordingly, we find that, of the 130 cases reported, 70 occurred in the months of July, August, and September. There are, besides, reasons why the men of this command should be predisposed to disease of almost every kind, but more especially to those of which we are speaking. The quarters, in consequence of a scarcity of timber, are built of sod, and were thrown up hastily (though not until one snow had whitened the uncovered walls), in order, as was supposed, to obtain shelter from the storms of one winter. They are badly ventilated, nor can they be improved without endangering the stability of the structure. With a few exceptions, all the members of the company, who are not in the hospital, sleep in one apartment, and that is a small one for the purpose. The bunks are constructed in three rows, the one above another, with about two feet intervening between the rows. They are built against the wall, and consequently there is merely the opening in front through which the air may obtain ingress and egress. Can it surprise one, that men so situated should be liable to disease?

There remains but one other disease which requires mention; and I refer to it, not for the purpose of affording materials from which a new theory may be formed, but in order to call attention to a fact, which has been long known, and which should never be lost sight of. The post was thrown up in the autumn of 1850. During the first and second quarters of 1851, there were 18 cases of scorbutus entered upon the hospital register. This, however, did not comprise the whole number of cases which occurred at the post. In his quarterly report for the first quarter of 1851, Assistant Surgeon Langworthy wrote as follows: "I have reported but 12 cases of this disease in my quarterly report, on this account—to wit: that only that number were actually incapacitated and unfit for duty *in toto*, and received on the sick report. A much larger number received medicine." A supply of potatoes was procured, and soon after their reception the disease began to give way. In order to guard against its recurrence, attempts were made to cultivate a garden. This proved unsuccessful, on account of a deficiency of moisture. As it was apprehended that the disease would prevail with as great or greater severity in the following winter and spring than it had done in the past, potatoes were procured from the States during the autumn of 1851, by private contributions of members of the command, and served out to them twice per week. In consequence of this step, as I believe, the disease has not since made its appearance. Another supply of the same vegetable has been obtained, and I indulge the hope that we shall see as little of scorbutus, during the winter of 1852-'53, as we did in the one that preceded it.

The remainder of the diseases reported cannot be said to prevail at the post, but are such as are incidental to every climate, and to men under all circumstances of life. If there be any peculiarity which marks them, it is the mildness of their form. The only maladies which have proved at all obstinate since my sojourn at the post (*i. e.* since September, 1851), have been those of the alimentary canal. As a proof of the want of severity in the cases under treatment, it is only necessary to state that, for the last fifteen months, not a death has occurred in the command.

In consequence of their roving life, I have had but slight opportunities of making myself acquainted with the diseases of the Indian tribes. I have seen many Indians, but none of them during many consecutive days. My attention has been called to many maladies, but I have had opportunities of observing the progress and termination of but few. Those which I have noticed most frequently are venereal diseases in their various forms, ophthalmia, bronchitis,



rheumatism, and ulcers of the leg. I have also seen cases of ascites, diseases of the urinary organs, and diarrhœa. Wounds and injuries, resulting from their hunting the buffalo, and from their waging war upon one another, are very common. Cephalalgia, dependent upon a deranged condition of the digestive organs, is very frequent among them, and is, in most instances, speedily removed by a dose of calomel and rhubarb, or calomel and jalap. I have been often applied to for remedies for impotency, probably induced by a plurality of wives, and by premature and excessive venery.

I have found their diseases similar in character to those of the same name in the white man, and amenable to the same rules of treatment.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT RILEY.

By Assistant Surgeon Joseph K. Barnes: 1853.

Fort Riley is situated upon the west bank of the Pawnee river, in longitude  $96^{\circ} 30'$  W., latitude  $39^{\circ}$ , immediately opposite its junction with the "Smoky Hill" fork to form the Kansas river. Upon recent maps the name has been changed to "Republican," although it is only known as the "Pawnee" by the Indians, who also call the principal branch "Kansas" as high up as the mouth of "Great Saline" fork. These two streams—one flowing S.E., the other N.E.—form two valleys, varying in width from one to three miles, and bounded on either side by lofty ranges of limestone bluffs. The valley of the "Kansas" is the continuation of these to the southeast, and varies from a few hundred yards to several miles in width.

The site selected for the post is a bench or plateau of prairie, midway from the river and bluff, with an elevation of fifty or sixty feet above the heavily timbered bottom to the east, and protected on the northwest by a limestone ridge 150 to 200 feet in height. The distance from the base of the bluffs to the river is 2,500 yards, and the entire width of the gorge from east to west nearly three miles. The direction of the valleys gives a corresponding direction to the lower currents of air; those passing from the southward must come through the openings to the S.E. or S.W., while those from the northward pass up the gorge to the N.E.; and, in consequence, a perfectly calm day is very rare, a breeze from one of these points being of almost constant occurrence. The soil, on the hill-sides, intermediate plain, and river-bottom, is a pale yellow loam, with a large proportion of silicious sand. The river banks (with the exception of a few inches in depth of alluvion), its bed and bars, are mostly quicksand. Although subject to great and sudden increase of volume during the rainy season, the Pawnee rarely or never overflows its banks, and, upon its subsidence, leaves no marshes, alluvial bottoms, or stagnant pools. The numerous creeks emptying into it at short intervals, are rapid currents rising from copious springs in the bluffs, whose outlets are worn by the heavy rains of spring and summer into deep cañons.

The bottom-lands near the river bank are generally covered with a heavy growth of oak, sycamore, cottonwood, coffee-bean, hackberry, and walnut, which in some places extend as far back as the second plateau, and follow the creeks and cañons to their heads: although, in others, the prairie continues, by a gradual descent from the base of the bluffs to the river, free from trees or undergrowth. During the summer the troops have been supplied with water from a large and unfailing spring, the low temperature of which renders it preferable to that of the river, which is in every respect equal to that of the Missouri.

The buildings in course of erection are judiciously situated with regard to natural drainage; are commodious and well ventilated, with walls of porous limestone, which will be equal in dryness to those of the best quality of brick.

Since the 20th of May, large quantities of timber have been cut in the bottoms, leaving the ground cumbered with decaying tree-tops, branches, and foliage, without any perceptible effect upon the health of the troops; the parties at work near the river being quite as free from disease as those at the quarries; not a single *original* case of malarial fever having appeared



among them. The dryness and equable (although high) degree of heat during August and September, doubtless, tended materially to this exemption; but, after a careful examination of the surrounding country, and in the absence of all the usually considered "local causes," or the proximity of rich prairie land, I should anticipate that this post will remain comparatively free from malarial disease.

In the winter months, from its elevation—being at least 1,000 feet above the Missouri level at Kansas—its position in the centre of a funnel-shaped gorge open to the northeast, and the almost constant prevalence of high winds, it will probably prove exceedingly cold and wet, and productive of many cases of disease of the "respiratory organs" and "fibrous structures."

## DISEASES.

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	5,647	4,573	39	809	7
Second quarter.....	5,690	5,253	75	921	13
Third quarter.....	4,572	5,676	37	1,241	8
Fourth quarter.....	5,367	5,427	16	1,011	3
Annual ratio.....	5,319	20,929	167	3,934	31
Exclusive of cholera.....		20,804	107	3,911	20

The annual proportion of sickness, in this class of posts, to the number of men, is 3.93 to 1; the corresponding ratio of deaths 1 in 32, or 3.1 per cent.; and the proportion of deaths to cases treated 1 in 129, or 0.8 per cent. Excluding the sickness and mortality from cholera, the ratio of deaths to the mean strength is 1 in 49, or 2 per cent.

## FEVERS.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	5,647		5,690		4,572		5,367		5,319			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris congestiva-----	1	0	1	0	7	3	0	0	9	3	1 in 3	1.6
Febris continua communis---	4	0	12	1	7	0	13	1	36	2	1 in 18	6.7
Febris intermittens quotidiana	241	0	481	0	1123	0	1001	0	2846	0	0 in 2846	535
Febris intermittens tertiana	401	0	817	0	666	1	675	0	2559	1	1 in 2559	481
Febris intermittens quartana.	4	0	8	0	18	0	10	0	40	0	0 in 40	7.5
Febris remittens -----	23	0	42	1	152	3	67	1	284	5	1 in 57	53
Febris typhus-----	2	0	2	1	0	0	5	0	9	1	1 in 9	1.6
Total -----	676	0	1363	3	1973	7	1771	2	5783	12	1 in 482	1087

**ERUPTIVE FEVERS.**—In this class, we have merely to note the prevalence of rubeola at Fort Leavenworth, in the second quarters of 1846 and 1848. At each of those periods the command was partly volunteers, and no separate reports for the regular troops were rendered. This is the only instance in which the statistics of other than regular troops are given in this report; separate and distinct reports being required for volunteers. In this instance, these reports would have been excluded, but for the fact that a comparatively large number of regular troops were then at that post.

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters. ....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength .....	5,647		5,690		4,572		5,367		5,319				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Cholera Asiatica.....	6	2	88	44	31	14	0	0	125	60	1 in	2.1	
Diarrhœa.....	306	1	619	1	676	0	559	1	2160	3	1 in	720	406
Dysentery acuta.....	87	2	134	3	272	4	130	1	623	10	1 in	62	117
Dysentery chronica.....	5	0	2	0	6	0	8	0	21	0	0 in	21	4
Enteritis.....	4	2	6	2	2	0	3	0	15	4	1 in	4	2.8
Hepatitis acuta.....	8	0	14	0	7	0	6	0	35	0	0 in	35	6.5
Hepatitis chronica.....	3	0	2	0	3	0	4	0	12	0	0 in	12	2
Obstipatio.....	116	0	164	0	179	0	114	0	573	0	0 in	573	107
All other diseases of this system.....	174	1	226	0	261	0	152	0	813	1	1 in	813	152
Total.....	709	8	1255	50	1437	18	976	2	4377	78	1 in	56	823
Exclusive of cholera.....									4252	18	1 in	237	799

The only station in the class now under consideration, which has been visited to any extent by cholera during the period embraced in this report, is Fort Leavenworth, where the first case is reported in January, 1849. Surgeon McDougall, in transmitting his report of sick for the third quarter 1848, remarks that "the whole command has been more or less affected with diarrhœa, which has prevailed extensively throughout the country: perhaps more owing to an epidemic constitution of the atmosphere than to the usual causes." In the next quarterly report, December, 1848, the same surgeon comments upon the marked exemption of the troops from miasmatic diseases, which he attributes to the limited inundations of the Missouri river, and upon the prevalence of diarrhœa. He also notes the fact that all diseases are of a marked asthenic character; which is again stated to be the case in the next report, (that for the first three months of 1849,) when cholera made its appearance, and continued, some cases being reported each month, till some time in August. In the spring of the next year (1850) Surgeon McDougall again comments upon the evident disposition to diarrhœa, or typhoid prostration, although no epidemic prevailed. In July of that year cholera cases are again reported; and once more this disease reappears in May, June, and July, 1851. Two cases are reported in May, 1852, and seven in June, 1854. The original reports contain no notes respecting the character or treatment of this disease. In explanation of the frequent recurrence of cholera at this post, it may be remarked that it is used as a general depot of supplies, and as a starting-point or rendezvous for troops on the march to New Mexico and to the stations on the Great



Plains. The reports show that the disease was brought with troops from St. Louis; most of the commands having suffered from this disease in ascending the Missouri.

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	5,647		5,690		4,572		5,367		5,319			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica..	86	1	70	1	14	0	98	0	268	2	1 in 131	50
Catarrhus .....	656	0	208	1	268	0	451	0	1583	1	1 in 1583	297
Phthisis pulmonalis.....	5	10	9	1	8	2	6	0	28	13	1 in 2	5.2
Pleuritis .....	63	0	76	1	35	0	59	0	233	1	1 in 233	43
Pneumonia .....	29	3	27	2	22	0	25	2	103	7	1 in 14.7	19
All other diseases of this system .....	11	0	19	0	6	0	4	0	40	0	0 in 40	7
Total .....	850	14	409	6	353	2	643	2	2255	24	1 in 94	423
Rheumatismus .....	272	0	209	0	148	0	213	0	842	0	0 in 842	158

CATARRHUS EPIDEMICUS—Is noted as commencing suddenly early in July, 1843, at Leavenworth, and terminating abruptly on the last day of August. This disease also prevailed at Fort Scott during the months of August and September. Forts Atkinson and Riley were not then established.

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ABSTRACTS

OF THE

PRINCIPAL DISEASES AND DEATHS

OCCURRING AMONG THE TROOPS

IN THE

MIDDLE DIVISION.

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## REPORT ON THE SICKNESS AND MORTALITY

## No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	YEARS.....	FIRST QUARTER.											
		1839.		1840.		1841.		1842.		1843.		1844.	
		14.	121.	125.	116.	776.	664.						
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers.....	Febris continua communis.....				1								
	Febris intermittens quotidiana.....	1		1		1		2		9			
	Febris intermittens tertiana.....			3		7				1		3	
	Febris intermittens quartana.....									1		1	
	Febris remittens.....	1		3		1						1	
	Febris typhus.....												1
Eruptive fevers.....	Febris typhus enterodes.....												
	Erysipelas.....									1			
	Rubeola.....												
	Varicella.....												
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....												
	Diarrhoea.....			6				13		14		11	
	Dysentery acuta.....									16		16	
	Dysentery chronica.....									4		1	
	Hepatitis acuta.....												
	Hepatitis chronica.....											1	
	Obstipatio.....			3				6		3		9	
	All other diseases of this system.....	1		3	1	2		16		14		12	
	Bronchitis acuta et chronica.....									2			
	Catarrhus.....			6		40		52		68		107	
Diseases of the respiratory system.	Phthisis pulmonalis.....												
	Pneumitis.....	1		2		1			2		5		
	Pneumonia.....					2			2		2		
	All other diseases of this system.....					1			1		4		
	Cephalalgia.....									3			
Diseases of the brain and nervous system.	Delirium tremens.....									4		1	
	Epilepsia.....							1		2		1	
	Neuralgia.....											1	
	All other diseases of this system.....									3	1	3	
	Gonorrhoea.....			6		3		5		15		6	
Diseases of the urinary and genital organs.	Stricture urethrae.....			1									
	Syphilis primitiva.....			4		4		1		5			
	Syphilis consecutiva.....					1				1			
	All other diseases of this class.....			1		1				11		5	
Diseases of the serous and exhalant vessels.	Ascites.....											1	
	All other diseases of this class.....									1		1	
	Pernio.....	2				1				1			
Diseases of the fibrous & muscular structures.	Podagra.....												
	Rheumatismus, acutus et chronicus.....	3		14		3		12		19		23	
	Fistula.....												
Abscesses and ulcers.....	Phlegmon et abscessus.....			2		3		4		13		19	
	Ulcus.....							3		5		3	
	Amblyoma.....									1		1	
	Concussio cerebri.....												
Wounds and injuries.....	Contusio.....			2		10		16		7		25	
	Fractura.....									1			
	Luxatio.....			2	1			1		1			
	Subluxatio.....			5		1		15		7		5	
	Vulnus incisum.....	1		6				8		8		5	
	Vulnus laceratum.....											5	
	Vulnus punctum.....							2				2	
	Vulnus sclopetum.....									3			
	Debilitas.....												
	Ebrietas.....	3				2				3		4	1
Miscellaneous.....	Hæmorrhoeis.....			1				1		5		4	
	Hæma.....									2		1	
	Morbæ cutis.....									3		1	
	Morbæ oculi.....			1		1		4		3		4	
	Scorbutus.....												
	All other diseases.....			3				5		6		8	
	Total.....	16		78	2	86		187		271	1	304	1

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## REPORT ON THE SICKNESS AND MORTALITY

No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.		SECOND QUARTER.											
		YEARS.....		1839.	1840.	1841.	1842.	1843.	1844.				
		MEAN STRENGTH.....		41.	129.	138.	357.	759.	684.				
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.		
Fever.	Febris continua communis.....									6			
	Febris intermittens quotidiana.....		1	3		9	13		3				
	Febris intermittens tertiana.....		6	10		22	15		9				
	Febris intermittens quartana.....					2			12				
	Febris remittens.....		1			1	1		4				
Eruptive fever.	Febris typhus remittens.....												
	Erysipelas.....												
	Rubeola.....					1							
	Varicella.....												
	Diphtheria.....	5	4	10	2	15		29					
Diseases of the organs connected with the digestive system.	Dysentery.....		8	1	16	13		34					
	Dysenteria chronica.....						4						
	Hepatitis.....		2				1		1				
	Gastritis.....			3	1	5		9		11			
	Ventriculitis.....			2	1	16		22		16			
Diseases of the respiratory system.	Pneumonia.....					2		1					
	Catarrh.....	2	6	16	10	39		47					
	Pleurisy.....				1	1		1					
	Bronchitis.....	1	1				4		1				
	Pneumothorax.....		1				2		3				
Diseases of the urinary and excretory system.	Alcoholism.....					1							
	Cystitis.....							9		2			
	Gonorrhoea.....			1	1								
	Epididymitis.....		1										
	Nephritis.....						1						
Diseases of the urinary and excretory system.	Ventriculitis.....					2		1		1			
	Gonorrhoea.....	2	1	1	7	9		10					
	Stricture urethrae.....												
	Catarrh.....	1	6		2	10		1					
	Epithelioma.....					1		1		2			
Diseases of the urinary and excretory system.	Alcoholism.....		2	1	4	4	1	6					
	Ventriculitis.....												
	Alcoholism.....									1			
	Ventriculitis.....												
	Alcoholism.....												
Diseases of the fibrous & muscular structures.	Rheumatism.....												
	Rheumatismus acutus et chronicus.....		3	2	12	19		15					
	Pleurisy.....												
	Pneumonia.....			1	5	29		9					
	Pleurisy.....		1		1	14		10					
Abscesses and ulcers.	Abscess.....						1		3				
	Abscess.....												
	Abscess.....												
	Abscess.....					1							
	Abscess.....												
Wounds and injuries.	Wound.....	13	2	6	17			21					
	Wound.....				1								
	Wound.....												
	Wound.....		1		8	9		4					
	Wound.....		7			8		1					
Miscellaneous.	Vulnus.....									3			
	Vulnus punctum.....				2								
	Vulnus.....						2						
	Diphtheria.....						2						
	Pharyngitis.....			2	6	2	2		2				
Miscellaneous.	Hemorrhage.....			1		6		2					
	Hemorrhage.....						2						
	Morbus oculi.....						1		1				
	Morbus oculi.....		3	1	3	9		4					
	Scabies.....												
Miscellaneous.	Scabies.....												
	Scabies.....												
	Scabies.....												
	Scabies.....												
	Scabies.....												
All other diseases.....			1	2	3	1	12		4				
Total.....		13	55	55	2	182	2	301	3	276			

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## REPORT ON THE SICKNESS AND MORTALITY

No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.		THIRD QUARTER.													
		YEARS.		1839.		1840.		1841.		1842.		1843.		1844.	
		MEAN STRENGTH.		49.		168.		222.		806.		736.		723.	
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fever.	Febris continua communis			3				12				2			
	Febris intermittens quotidiana	4		2		7		25		20		30			
	Febris intermittens tertiana	10		17		27		42		21		27			
	Febris intermittens quartana											2			
	Febris remittens	2		4		10		10		4	1	28			
	Febris typhus														
Eruptive fevers.	Febris typhus enterodes									1					
	Erysipelas							1				1			
	Rubella														
Diseases of the organs connected with the digestive system.	Varioloid														
	Diarrhoea	10		6		40	1	104		41		24			
	Dysenteria acuta	3		17		44		88		37		14			
	Dysenteria chronica					3	1			2					
	Hepatitis acuta														
	Hepatitis chronica														
Diseases of the respiratory system.	Obstipatio	1		11		4		22		10		4			
	All other diseases of this system	2		3		22		83		48		30	1		
	Bronchitis acuta et chronica							5		2		1			
	Cancer	1		9		11		36		282		16			
	Phthisis pulmonalis			1		1									
	Pneumonia							5		6		3			
Diseases of the brain and nervous system.	Pericarditis											1			
	All other diseases of this system									2		1			
	Cerebral lesion							10		6		2			
	Dolium tremens							1				2			
	Epilepsia					1		2							
	Neuralgia					1						3			
Diseases of the urinary and genital organs.	All other diseases of this system	1	1			7		1							
	Gonorrhoea	1		7		10		13		9		15			
	Stricture methica														
	Syphilis primitiva			6		2		13		5		8			
	Syphilis consecutiva									1		3			
	All other diseases of this class	1				1		9		8		6			
Diseases of the serous and exhalant vessels.	Aneurysm					1		1							
	All other diseases of this class									1	1				
Diseases of the fibrous & muscular structures.	Pericarditis														
	Peritonitis														
	Rheumatismus acutus et chronicus	2		11		8		29		20		13			
Abscesses and ulcers.	Fistula														
	Phlegmon et abscessus			3		1		26		24		24			
	Ulcers					4		6		9		3			
	Amputation			2				4		1					
	Amputatio														
	Concussio cerebri											1			
Wounds and injuries.	Contusio			10		9		19		13		21			
	Fractura							3							
	Luxatio	2						2							
	Punctura					1				1					
	Sicc luxatio	2		5				4		7		1			
	Vulnus ossium			4		4		12		3		3			
Miscellaneous.	Vulnus lacertum					6						4			
	Vulnus punctum									2		1			
	Vulnus sclopeticum									3					
	Delictus							1		1					
	Eclampsia	1		2				6		5		3			
	Hæmorrhoea			1				1		4					
	Hæmiplegia							3		1		4			
	Morbus mentis									1		1			
	Morbus oculi			2		4		7		5		5			
	Scorbutus							1							
	All other diseases			6		11		6		12		4			
	Total		43	1	135		240	2	613		618	2	311	1	



AMONG THE TROOPS IN THE MIDDLE DIVISION.

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AMONG THE TROOPS AT POSTS IN THE MIDDLE ATLANTIC REGION.

THIRD QUARTER.										AGGREGATE STRENGTH.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.		
560.	336.	210.	736.	415.	441.	423.	397.	356.	402.	6,940.	
Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Total cases.	Total med.
1	4					5	3	2		32	
11	11	12	6	8	13	2	9	18	2	189	
23	37	14	18	18	27	23	34	40	30	415	
			10	2	1	3	3	2	5	28	
17	10	1	132	2	8	2	5	20	2	263	3
			1	1				3		5	
			43	36						44	36
						1	1			4	
		2								2	
									2	2	
26	24	11	373	13	82	1	38	34	74	983	15
19	35	1	7	50	1	3	3	6	3	343	2
			3	1		1	1		6	10	2
					1					1	
					1	1				2	
23	24	2	23	9	20	5	10	12	1	184	
22	11	18	12	11	14	5	18	29	23	351	1
		2	4					1	1	16	
5	8	7	7	14	13	29	18	11	19	486	
	1		1					1	1	5	2
3	1		2	1	1			1		23	
	1							4		6	
			1		3		3			10	
2	2							4	3	29	
5	3	3	1	1	2	1		1	2	21	2
1	1	1	5		1		2			14	
1	1		8	1	3	5				23	
3	2		2		2	1	2	3	2	26	1
9	11	4	7	5	9	11	6	10	4	131	
1										1	
7	6	7	17	5	4	4	2	3	5	94	
1					4			2		11	
5	2	2	3	1	1	1	5	3	1	49	
										2	
										1	1
9	3	3	13	1	10	6	7	12	3	163	1
						1	1			2	
11	11	10	18	18	15	19	17	14	12	223	
4	3		19	8	2	1	5	17	22	103	
1			2	1						11	
				1						1	
			1				2	1	3	8	
21	18	5	12	27	18	19	16	11	9	228	
1			5				2			11	
1				2	1		1			9	
	2									4	
6	1	1	3	4		5	7	4	1	51	
1			2	1	12	3	5	2	2	54	
	1	2		3			3		1	20	
1		1			1					6	
										3	
			29	1		2		4	3	41	
7	1			4	6	2	6	8	1	52	
	3	1	4	2		1	1		1	19	
	1		2	3		3				17	
2	1			1	1		1	1	1	10	
4	3	3	1	4	1	5	4	1	5	54	
			1							2	
6	1	12	8	4	30	18	26	19	25	187	1
260	1	255	1	119	1	257	227	276	341	5,078	67

## REPORT ON THE SICKNESS AND MORTALITY

No. 1. ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	FOURTH QUARTER.											
	YEARS.....	1839.	1840.	1841.	1842.	1843.	1844.					
	MEAN SEASON.....	116.	162.	400.	822.	650.	700.					
SPECIFIC DISEASES.		Case	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.
Fever.....	Febbris continua communis.....		1			2		2				
	Febbris intermittens quotidiana.....	1		9	1	19	11	12				
	Febbris intermittens tertiana.....	7		11	43	16	20	13				
	Febbris intermittens quartana.....					1	9					
	Febbris remittens.....	1		1	2	9	2	4				
	Febbris typhus.....											
	Febbris typhus enterodes.....											
Eruptive fevers.....	Erysipelas.....					1		1				
	Rubeola.....											
	Scarlatina.....											
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....											
	Dysentery.....	5	1	13	36	8	12					
	Dysentery acuta.....	1		12	11	40	25	7				
	Dysentery chronica.....	1			2							
	Enteritis.....							2				
	Hepatitis acuta.....							1				
	Hepatitis chronica.....					1		1				
	Obstipatio.....		2	2	13	21	5					
	All other diseases of this system.....	3	3	21	24	16	14					
	Bronchitis acuta et chronica.....					1						
Diseases of the respiratory system.	Catarrhus.....	8	15	58	62	68	36					
	Phthisis pulmonalis.....			1	1	1	1	1	1	1	1	1
	Plautis.....	1				1	4	2				
	Pneumonia.....	2			2			2				
	All other diseases of this system.....							1				
	Cephalalgia.....					4	4	2				
Diseases of the brain and nervous system.	Delirium tremens.....							3				
	Epilepsia.....			2				3				
	Neuralgia.....							5				
	All other diseases of this system.....			3	1	3	2	1				
	Gonorrhoea.....	7	5	8	10	5	10					
Diseases of the urinary and genital organs.	Stricture urethrae.....	1		1								
	Syphilis primitiva.....	5	3	1	14	8	9					
	Syphilis consecutiva.....					2	1					
	All other diseases of this class.....	3	1	1	3	5	1					
Diseases of the serous and exhalant vessels.	Ascites.....							1				
	All other diseases of this class.....											
Diseases of the fibrous & muscular structures.	Peritonitis.....				2							
	Podagra.....							1				
	Rheumatismus acutus et chronicus.....	1	4	19	18	16	10					
Abscesses and ulcers.....	Fistula.....											
	Phlegmon et abscessus.....	3	1	5	13	24	11					
	Ulcus.....	2	1	10	8	5	4					
	Amputatio.....	3		2			1					
	Concreta in cerebello.....					1						
Wounds and injuries.....	Contusio.....	3	6	36	30	21	18					
	Fractura.....							1				
	Luxatio.....		1					1				
	Subluxatio.....			2	8	13	6					
	Vulnus incisum.....		4	4	8	6	5	1				
	Vulnus laceratum.....			8		4	4					
	Vulnus punctum.....			2	5	1						
	Vulnus scissum.....	2				1						
	Debilitas.....			1		1						
Miscellaneous.....	Fibrilis.....		1		3	6	5					
	Hæmorrhoids.....	2	1	1	5							
	Hæmiplegia.....				1	1						
	Morbidity.....			3	1		2					
	Morbidity.....			3	9	6	3					
	Scrophulous.....			2								
	All other diseases.....			14	10	10	7					
Total.....		61	88	302	4	367	1	334	3	232	3	

AMONG THE TROOPS AT POSTS IN THE MIDDLE ATLANTIC REGION.

FOURTH QUARTER.										CUMULATIVE SIX MONTHS.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.		
448.	175.	263.	659.	468.	464.	442.	394.	289.	371.	6,723.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
1		2				1	1	2		12	
5		1	1	7	5	5	6	1	1	85	
8	5	11	12	39	26	41	45	23	16	333	
1						1	8	1		21	
6	7	4	1	2	3	3	1	2		51	1
							2	1		3	
						1				3	
		1								1	
4	3	5	36	1	19	31	22	6	6	218	1
19		3	2	2	3	1	1		5	125	2
								1		4	
				1	1		5			9	
		2								3	
					2		1			5	
7	1	1	4	3	5	6	8	2		89	
11	3	6	6	10	10	11	14	4	19	166	
4				3	1	5	6			17	
25	14	11	14	23	26	19	49	27	26	484	
							1	1	3	7	5
1		4	2	2	1					18	
		1	2		2					11	
			1	1	1		2	4	2	16	2
				2			3			15	
	1	5	4	1	1	2	1	2	3	22	1
	1			1		2	2			11	
				1	2	3				11	
		1	1		2					13	1
6	2	2	18	9	6	6	6	3	8	111	
			1		1					3	
6	3	1	17	6	4	5	6	2	2	92	
1			1	1	3	1				10	
1	1	1	5	5	2	3		1		33	
										1	
								2		2	
										2	
										1	
8	1	3	16	12	16	15	15	3	3	160	
				1				4		2	
10	6		7	6	9	9	12	5	8	129	
1	2	1	6	5	3	3	4	5	12	72	
1				1		2	1			11	
							6		8	15	
11	4	4	10	17	24	25	29	9	14	257	
1			3			1	1			7	
1						1				4	
	1	1	6	3		1	4	7	8	68	
2	3		1	8	6	5	10			62	1
2			2	2			4	1		24	
					1	1		1		11	
										3	
			4						1	7	
1	1			3	9	3	8	4		44	
1					2	2			2	16	
		1			1	1				5	
3	1			1		1				14	
4			3	4	1	2	2	4	7	39	
										2	
6	1	3	10	11	22	22	27	12	20	159	
143	61	1	75	202	220	228	231	284	1	3,114	14



## REPORT ON THE SICKNESS AND MORTALITY

No. 2 ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	FIRST QUARTER.											
	YEARS.....	1839.	1840.	1841.	1842.	1843.	1844.					
	MEAN STRENGTH.....	40.	171.	222	173.	115.	106.					
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	
Fever.....	Febris continua communis.....		1		5							
	Febris intermittens quotidiana.....				4			1				
	Febris intermittens tertiana.....				3		3	2				
	Febris intermittens quartana.....		1									
	Febris remittens.....	4	1			3			2			
	Febris typhus.....				4	1	5					
Eruptive fevers.....	Febris typhus icterodes.....											
	Erysipelas.....											
	Rubeola.....				1							
	Scarlatina.....				2							
	Varicella.....											
	Variolori.....											
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....											
	Diarrhoea.....		5		13		5	4		1		
	Dysentery acuta.....				3							
	Dysentery chronica.....											
	Enteritis.....											
	Hepatitis acuta.....											
Diseases of the respiratory system.	Hepatitis chronica.....											
	Obstipatio.....		1		10		9					
	All other diseases of this system.....	1	11		12		6		2		2	
	Bronchitis, acuta et chronica.....		1		8		7		7			
	Catarrhus.....	1	19		7		7		5		6	
	Phthisis pulmonalis.....	1				1		1				
Diseases of the brain and nervous system.	Pleuritis.....	3	4		2		3		2			
	Pneumonia.....		4			1	1					
	All other diseases of this system.....											
	Cephalalgia.....		2									
	Delirium tremens.....		1				1	1				
	Epilepsia.....	1	2									
Diseases of the urinary and genital organs.	Neuralgia.....		1		1				1			
	All other diseases of this system.....				1	1	1					
	Gonorrhoea.....		2		3							
	Stricture methue.....								1			
	Syphilis primitiva.....										1	
	Syphilis consecutiva.....			1			1		1			
Diseases of the serous and exhalent vessels.	All other diseases of this class.....											
	Ascites.....											
	All other diseases of this class.....											
	Pelmo.....		2									
	Podagra.....											
	Rheumatismus, acutus et chronicus.....	1	8		2		4		2		4	
Abscesses and ulcers....	Fistula.....		1									
	Phlegmon et abscessus.....		5		2		2		1			
	Ulcus.....	1	7		7		3		2			
	Ambustio.....											
	Contusio.....		24		11		9		1		2	
	Fractura.....		2		1							
Wounds and injuries....	Luxatio.....		1									
	Sub luxatio.....		2		3		3					
	Vulnus incisum.....		3		9		1		1			
	Vulnus laceratum.....	4									2	
	Vulnus punctum.....											
	Vulnus scelopaticum.....		11									
Miscellaneous.....	Elonctas.....											
	Hæmorrhoids.....		4		1		1					
	Hæmori.....											
	Morbi cutis.....											
	Morbi oculi.....	1	5		3		1		2			
	Scorbutus.....											
All other diseases.....			3		11	1	4		9		1	
Total.....		21	134	1	129	5	80	1	48	21		

AMONG THE TROOPS IN THE MIDDLE DIVISION.

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AMONG THE TROOPS AT POSTS IN THE MIDDLE INTERIOR. EAST.

## REPORT ON THE SICKNESS AND MORTALITY

No. 2.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

		SECOND QUARTER.											
CLASSES OF DISEASES.		YEARS .....	1839.	1840.	1841.	1842.	1843.	1844.					
		MEAN STRENGTH .....	40.	187.	197.	221.	113.	105.					
SPECIFIC DISEASES.		Cases	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.		
Fever.	Feb. continua communis.....		2		5								
	Feb. intermittens quotidiana.....		2		9								
	Feb. intermittens tertiana.....		5		7	2	1						
	Feb. intermittens quartana.....												
	Feb. remittens.....	4	13	8	8	1	4						
	Feb. typhus.....			2	2	4							
Eruptive fevers.....	Ery. ipelas.....												
	Rubella.....					3							
	Scarlatina.....												
	Varicella.....												
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....												
	Diarrhœa.....	6	10	13	21	1	4						
	Dysentery acuta.....		24										
	Dysentery chronica.....		2										
	Ectenitis.....												
	Hepatitis acuta.....												
Diseases of the respiratory system.	Hepatitis chronica.....												
	Obstipatio.....		3	6	5					2			
	All other diseases of this system.....	3	10	4	4	5	4						
	Bronchitis acuta et chronica.....			1	1								
	Catarrhus.....	1	9	10	2	4	4						
	Phthisis pulmonalis.....	1	1			1							
Diseases of the brain and nervous system.	Phrenitis.....			1	1								
	Pneumonia.....		4							5			
	All other diseases of this system.....		2	2									
	Cephalalgia.....		6	3									
	Delirium tremens.....		1										
	Epilepsia.....												
Diseases of the urinary and genital organs.	Neuralgia.....									1			
	All other diseases of this system.....												
	Gonorrhœa.....		1	4	3	1	2						
	Stricture methra.....					1	1						
	Syphilis primitiva.....												
	Syphilis consecutiva.....						1						
Diseases of the serous and exhalant vessels.	All other disease of this class.....			2						1			
	As this.....												
Diseases of the fibrous & muscular structures.	All other diseases of this class.....		1										
	Perio.....												
	Podagra.....												
	Rheumatismus acutus et chronicus.....	2	10	8	3		4						
Abscesses and ulcers....	Fistula.....		1										
	Phlegmon et abscessus.....	1	1	3	1	2							
	Uter.....	1	8	1	6								
	Amputatio.....												
	Concussio cerebri.....		1				1						
	Contusio.....		23	20	6	4	4						
Wounds and injuries....	Fractura.....		1										
	Luxatio.....												
	Sub-luxatio.....		1	3		2							
	Vulnus necrum.....	4	9	4	5		3						
	Vulnus laceratum.....												
	Vulnus punctum.....												
Miscellaneous.....	Vulnus sclopetarium.....		9										
	Debilitas.....			3						1			
	Eclampsia.....												
	Hæmorrhœis.....		2	1	1	1							
	Hæmatoma.....												
	Mole cutis.....			1									
All other diseases.....	Mole oculi.....	1	1	2	1	1							
		6	18	11	5	7							
Total.....		23	169	141	2	89	32	46					



## AMONG THE TROOPS AT POSTS IN THE MIDDLE INTERIOR.—EAST.

SECOND QUARTER.																AGGREGATE SERVICES.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.								
144.	39.	62.	199.	152.	199.	249.	191.	182.	29.							2,369.	
Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.	Cases. Died.							Total cases.	Total died.
1	2							1								11	
7				2												29	
			6	8	3	12	11	7								62	
		3														3	
2		1	2													43	
			9				1									16	2
1			1	1												3	
				3			1									7	
					1											1	
7	4	6	45	22	13	25	25	10	1							213	
			5		2	1										32	
																2	
					1											1	
3		2	13	13	10	7	11	8	1							87	
6	4	1	14	9	11	4	6	1	4							93	
								1								3	
6	2	1	9	16	25	13	12	17	2							133	
																3	
3		1	2	1												9	
9			2			1	1	2	1							24	1
1																5	
			15	3	3	4	2	3	1							40	
						1	1									3	
	1	1		1			1									4	
1			5													7	
	1															1	
			1	3	2	6	6	1								30	
			1		1											4	
			1		1	1										3	
					1	1										3	
				2	2		1									8	
																1	
							1									1	
	1															1	
5	3	1	5	7	1	1	4	3	2							58	1
			1				1									3	
3	1			7	5	18	13	11								65	
			4		2	1		1								24	
								1									1
																2	
12	1	2	16	19	4	33	22	11	4							181	
				1												2	
1						1	3									1	
1					3			8								19	
		3	4			3										25	
4			42	1	2	1	10	8	8							75	1
		1	3				4									8	
																9	
6																10	
							1	1								2	
2	1		2			2	1	3								16	
			4		1											5	
																1	
	1	1	1		1	1	1									12	
4		6	8		5	3	6	2	2							75	
85	22	30	221	1	125	1	98	160	131	1	160	1	13			1,488	6

## REPORT ON THE SICKNESS AND MORTALITY

## No. 2. ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG THE

CLASSES OF DISEASES.	THIRD QUARTER.									
	YEARS.....	1839.	1840.	1841.	1842.	1843.	1844.			
	MEAN STRENGTH .....	175.	258.	186.	239.	109.	104.			
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.
Fevers.....	Febus continua communis.....		4							
	Febus intermittens quotidianus.....		3		2		1			
	Febus intermittens tertiana.....						1		4	
	Febus intermittens quartana.....									
	Febus remittens.....	20	6	17	25	2	8			
	Febus typhus.....				1					
	Febus typhus heterodes.....									
Eruptive fevers.....	Erysipelas.....				1					
	Rubeola.....									
	Scarlatina.....								1	
	Varicella.....									
	Varicella.....									
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....									
	Dysentery.....	25	25	9	46	9	3			
	Dysentery acute.....	20	58	14	1					
	Dysentery chronic.....									
	Enteritis.....								1	
	Hepatitis acute.....									
	Hepatitis chronic.....									
Diseases of the respiratory system.	Obstruction.....		12	2	4	2	2			
	All other diseases of this system.....	9	3	7	1	4	4			
	Bronchitis, acute et chronic.....			1						
	Croup.....	7	7	6	8	27	5			
	Pleuritis.....		1	3	3	1				
	Pneumonia.....	1	1		1		1			
	All other diseases of this system.....									
Diseases of the brain and nervous system.	Cephalalgia.....		5							
	Delirium tremens.....		2	2					1	
	Epilepsia.....									
	Notalgia.....	1								
	All other diseases of this system.....		2						1	
Diseases of the urinary and genital organs.	Gonorrhoea.....	4	1	4	2		1			
	Stricture urethrae.....									
	Syphilis primitiva.....	4		1	1		2			
	Syphilis consecutiva.....		1							
Diseases of the serous and exhalant vessels.	All other diseases of this class.....		3						1	
	Varicella.....									
Diseases of the fibrous & muscular structures.	Peritonitis.....		1	1						
	Podagra.....									
	Rheumatismus, acutus et chronicus.....	4	8	1	2	1	1			
Abscesses and ulcers.....	Fistula.....	1								
	Phlegmon et abscessus.....		5	6	1	7				
	Flores.....	1	3	3	3					
Wounds and injuries.....	Ambustio.....					1				
	Contusio.....	3	13	7	3	6	2			
	Fractura.....		1	1						
	Luxatio.....			1						
	Subluxatio.....			4	2	1				
	Vulnus merum.....	9	1	2	5	1	1			
	Vulnus laceratum.....								1	
	Vulnus punctum.....			3						
	Vulnus scelopetrum.....		11							
	Debilitas.....		1	2	1		2			
Miscellaneous.....	Ebrietas.....	1	1							
	Hæmorrhoeis.....	3	3	2					2	
	Hernia.....		1	1						
	Modico oculi.....	1	2			1	3			
	Surditas.....									
	All other diseases.....	10	18		5	1	5			
Total.....		124	293	101	123	55	52		1	

TROOPS AT POSTS IN THE MIDDLE INTERIOR—EAST.

THIRD QUARTER.																			AGGREGATE STRENGTH.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.											
147.	36.	70.	26.	211.	232.	342.	95.	151.	150.										2,773.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
		1	1			1												7		
3		1	3			3								13				29		
5			13	5		10	8	3						3				52		
2	2	2		4	6	1		2										99		
1						1												3		
			2															3		
																		1		
				11	3													11	3	
6	4	6	19	34	23	161	15	23	72								476			
1	1	1	10	22	1	4	2	1									135	1		
			1				1										2			
					3												1			
2			6	9	9	20	7	4	9								88			
5	2	2	38	35	20	19	8	5	20	2							182	2		
																	1			
2		1	11	7	3	7	1	1	5								98			
		1															1	1		
				1													9			
4							1		6								14	1		
			1	4	6	11	4	1	4								36			
2		1	1	1		2											12	1		
	1	1	1						2	1							6			
					1	1		1	5								9			
																	3			
			8	5	8	10	5	1	2								51			
			3														3			
			5	4	3	8	3		1								32			
																	1			
			2			1	2		1								10			
			1	1													2	2		
			8	4	1	5	2	2	6								45			
																	1			
			15	2	8	38	9	11	6								107	1		
	2		5		7	20		2									46			
																	1			
7		2	42	19	7	53	13	18	6								201			
			2			2	1										7			
			2														3			
1					9	16	3	6									42			
1			2	4	3				4								33			
8	1	3	9	2	3	12	3	5									47			
																	3			
						3	1										14	1		
									1								7			
			2						3								7			
			2	1		3											16			
					1												3			
1			5	2	3	1	2		5								26			
														1	1		1	1		
		8	20	14	10	23	2	1	11								128			
51	13	30	1	240	1	190	3	149	430	2	86	86	185	3			2,118	14		





## AMONG THE TROOPS AT POSTS IN THE MIDDLE INTERIOR. EAST.

FOURTH QUARTER.																				AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
99.		43.		163.		221.		166.		245.		224.		138.		31.		195.		2,334.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
				3		1		2		1						1				24	
										10								18		29	
						15	1	1		7		7		5				12		62	
																				1	
1		2		13	2					1										37	3
																1				17	
						1														1	
										1										1	
												1								1	
		2		27		20		19		29		33		4				13		179	
				1		1		9		1		2		1				3		34	
										1										1	
				16		3		1		7		12		2				9		68	
4		1		6		11		8		8		13		2	1			3		83	1
				2														1		14	
3		3		29		47		18		8		15		12		1		12		167	
						1															1
2						1		1								1		4		17	
				2								2						2		7	
				7		2		1		2		4		1						23	
				1		1		1										1		19	
						1	1	3		1		7								14	1
				2				1		1		1						3		11	
				7		13		6		5		1		1						47	
						2														3	
				2		9		5		2		2		3				2		37	
				1																2	
										1		2		1				3		9	
										1										1	
2		2		3		2		6		3		7		3				4		52	
												1								2	
2						21		9		11		9		6		1		9		86	
1						1		1		2		4						1		18	
				1														1		2	
										1	1									1	1
4		4		4		25		13		8		14		5		3		16		115	
						1		1		2				1						6	
										2										2	
										7		5		1						22	
1				4				1										3		28	
2				2		8		4		6		11		3				1		39	
				1		2												1		4	
												1		1						12	
										1								2		4	
				1		1												2		4	
1						2		1				1								10	
				1																2	
																		1		2	
2		1		1		1				2								1		18	
				9		12		8		13		10		4				8		91	
25		15		146		297		120		136		165		56		8		136		1,420	8

## REPORT ON THE SICKNESS AND MORTALITY

No. 3.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	YEARS.....	FIRST QUARTER.													
		1848.		1849.		1850.		1851.		1852.		1853.			
		MEAN STRENGTH.....		290.		199.		230.		157.		252.		162.	
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers.....	Febris continua communis.....									1					
	Febris intermittens quotidiana.....	41	8	33		10		18							
	Febris intermittens tertiana.....	5										39			
	Febris intermittens quartana.....														
	Febris remittens.....	2		10		1									
	Febris typhus.....	7	6	5		1		9							
Eruptive fevers.....	Febris typhus icterodes.....														
	Erysipelas.....	10	3	3	2	2								1	
	Rubeola.....									12					
	Scarlatina.....														
	Varicella.....	2	1	3	1	2		2	2	1					
	Variceloid.....			4						1					
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....														
	Diarrhoea.....	3	7	2	17	13		13				11			
	Dysentery acuta.....	3	2	1	3							1			
	Dysentery chronica.....	1													
	Enteritis.....	2													
	Hepatitis acuta.....														
Diseases of the respiratory system.	Hepatitis chronica.....	3													
	Obstipatio.....	3	7	12	6	1		1				1			
	All other diseases of this system.....	22	7	9	3	2		2				3			
	Bronchitis acuta et chronica.....									14		5			
	Catarrhus.....	20	13	9	6	31		12							
	Phthisis pulmonalis.....											1			
Diseases of the brain and nervous system.	Pleuritis.....	9	4	2	1	1		1							
	Pneumonia.....	22	1	19	1	2		5	1						
	All other diseases of this system.....	1										1			
	Cephalalgia.....	2			1										
	Delirium tremens.....	3	1	1	1										
	Epilepsia.....	1			2			1							
Diseases of the urinary and genital organs.	Nemalgia.....		1	1				1							
	All other diseases of this system.....	2						1				1			
	Gonorrhoea.....	7	4					3				2			
	Stricture urethrae.....	1			1										
	Syphilis primitiva.....	2		3		3									
	Syphilis consecutiva.....		9		2	4									
Diseases of the serous and exhalant vessels.	All other diseases of this class.....														
	Ascites.....														
Diseases of the fibrous & muscular structures.	All other diseases of this class.....														
	Pernio.....														
Abscesses and ulcers....	Podagra.....														
	Rhumatismus, acutus et chronicus.....		3	4	1	5		5							
	Fistula.....		1	1											
	Phlegmon et abscessus.....	2	2	4		3		9							
	Ulcus.....	1		1	3			2							
	Ambustio.....														
Wounds and injuries....	Contusio.....			1				7			4				
	Fractura.....														
	Luxatio.....									1					
	Subluxatio.....	1	3	1				1							
	Vulnus incisum.....	7			2	3									
	Vulnus laceratum.....		1		1			3							
Miscellaneous.....	Vulnus punctum.....	1													
	Vulnus scilicet punctum.....	2													
	Debilitas.....			1								1			
	Ebrietas.....	2	1	1	1	2									
	Haemorrhoids.....			2											
	Hæmorrhoides.....														
Miscellaneous.....	Morbi cutis.....		3	5	1	6		3							
	Morbi oculi.....	3	2	5	5	4									
	All other diseases.....	1			2	11		3							
	Total.....	194	6	114	6	153	1	68	2	168	1	108			



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FIRST QUARTER.				SECOND QUARTER.																	
1854.		AGGREGATE STRENGTH.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.		AGGREGATE STRENGTH.	
132.		1,422.		187.		354.		131.		184.		104.		128.		144.		163.		1,395.	
Cases.	Died.	Total cases.	Total died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
		1																			
4		114		9		61		9		14		21		18		6		13		151	
7		51		2												29		4		35	
		13		1		12	1	5		10		4				2				34	1
2		30				9		3	1	3	2			3	1					18	4
		16	5			8	2													8	2
		12		21	4	1														22	4
		10	4					1													1
		5				3														3	
								66	4	2		8		19						95	4
3		67	2	7		22		11		15		14		7		16		49		141	
		9	1			7	1	1		7	1							1		16	2
		1								1										1	
		2		1						2										3	
						1												1		2	
		3				1														1	
		30		1		10		1		4		4		1		5		5		31	
1		47		12		23	2	1		2		4		1				7		50	2
		19		4										5		1		1		11	
2		96										3		8		2		8		21	
	1	1	1			2	1							1	1					3	2
		17		1		6		5												12	
1	1	68	4			19	2			3		1								23	2
		2						1								2				3	
		3				1														1	
		5	1	2		6	1			1										9	1
		4				1				1		2								4	
		3		1		1														2	
		4														1				1	
		16		2		2		2		1		1				1		1		10	
		2																			
		8				2										1		1		4	
		15				1		1				1								3	
				3		4															

## REPORT ON THE SICKNESS AND MORTALITY

No. 3.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	THIRD QUARTER.															
	YEARS .....		1847.		1848.		1849.		1850.		1851.		1852.		1853.	
	MEAN STRENGTH .....		338.		105.		130.		150.		219.		185.		129.	
	SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers.....	Febris continua commutans.....		83		25		10				18		19		2	
	Febris int. quotidiana.....		13												13	
	Febris intermittens tertiana.....				4				7							
	Febris intermittens quartana.....								13		10					
	Febris remittens.....				4		12	1					1			
	Febris typhus.....				4											
Eruptive fevers.....	Febris typhus heterodes.....															
	Erysipelas.....															
	Rubeola.....		31		1	1										
	Varicella.....															
Diseases of the organs connected with the digestive system.	Varicella.....															
	Cholera Asiatica.....						19	1	12		73	7				
	Dysentery.....		25	1	27	2	10		21	2	62		24		38	
	Dysentery acuta.....		3		6		4		13		13		6			
	Dysentery chronica.....												1			
	Enteritis.....				1		3		1						1	
	Hepatitis acuta.....															
	Obstipatio.....		1		2		9		3		6		8		6	
	All other diseases.....		17		2		3		4		3		31		9	
	Bronchitis acuta et chronica.....		4				1									
Diseases of the respiratory system.	Catarrhus.....		3								6		2		1	
	Phthisis pulmonalis.....				1		1									
	Pleuritis.....		8		2		1				1		1			
	Pneumonia.....				1											
	All other diseases.....										3				1	
	Cephalalgia.....		1										1			
Diseases of the brain and nervous system.	Delirium tremens.....		2		2		1				1		2			
	Epilepsia.....		2				1				1		2		1	
	Neuralgia.....						1		1							
	All other diseases.....				1	1							1		1	
	Gonorrhoea.....		10		2						2					
Diseases of the urinary and genital organs.	Stricture urethrae.....												1			
	Syphilis primitiva.....				1				1						2	
	Syphilis consecutiva.....				2						5				1	
	All other diseases.....		1												2	
Diseases of the serous and exhalant vessels.	Ascites.....								1							
	All other diseases.....															
Diseases of the fibrous & muscular structures.	Pernio.....															
	Podagra.....															
	Rheumatismus.....		4		2		2		2				1		4	
Abscesses and ulcers.....	Fistula.....															
	Phlegmon et abscessus.....		3		3		3		4		4		12			
	Ulcus.....		6		3		4		1		8		1		1	
	Ambustio.....				1											
Wounds and injuries.....	Concussio cerebri.....															
	Confusio.....				1						6		4			
	Fractura.....		1		1	1									1	
	Luxatio.....				1										1	
	Sub luxatio.....		4				2		1		2					
	Vulnus incisum.....		2		1				1		8				3	
	Vulnus laceratum.....												4		1	
	Vulnus punctum.....		2													
	Vulnus sclopeticum.....															
	Dehissas.....		1				1				3					
Miscellaneous.....	Echymas.....				2		2		3		2				2	
	Hæmorrhoids.....						1									
	Hæma.....		2								3				1	
	Morbi cutis.....				1		3						2			
	Morbi oculi.....		2		2		1				7		3			
	Scorbutus.....												1			
Total.....			211	1	106	5	94	3	91	2	247	7	134		100	

## AMONG THE TROOPS AT NEWPORT BARRACKS, KENTUCKY.

THIRD QUARTER.				FOURTH QUARTER.																	
1854.		AGGREGATE STRENGTH.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.		AGGREGATE STRENGTH.	
169.		1,455.		304.		153.		200.		151.		205.		214.		96.		223.		1,546.	
Cases.	Died.	Total cases.	Total died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
23		180		67		10		15		15		23		34		23		187			
4		30														6		6			
		11						2		2						3		3			
		23		8				2		2								12			
		17	1			7		8	1			3	2	1		4		23			
		4						1										1			
										5		1				1		7			
		35	1	34	1	3												37		1	
				1				4										5			
												1						1			
15	2	119	10							5		12	2					17		2	
60		267	5	22		10		15		16		42		19		2		147			
4		49		1		3	1	6		2		1		4				21		1	
		1											1							1	
		6				1		1										2			
				1														1			
13		48		2		5		3		3		4		3				26			
11		80		18		1		4		4		1	1			1	2	31		1	
1		6										2		7		1		10			
2		14		12		8		2		5		9		10		1	27	74			
		1	1																		
		13		4	1	4				1				5				14		1	
		1		12		6		3		5		3						29			
		4								1				2				3			
		2		5														5			
		8			1			1				1		1		3		6		1	
		7		2		1								2				5			
3		5				2											1	3			
2		5	1	1		1										1		3			
		14		13				1		3		2		3				22			
1		2															1	1			
1		5		1								2					2	5			
		8						1								1		2			
1		4														1	1	2			
		1																			
1		16		1		3		2		1		1		3			6	17			
																1		1			
16		45		6						2		1		4		1	8	22			
1		25		7		3		5				5				5		25			
1		2																			
								1										1			
2		13						1						8		1	2	12			
		3	1							2								2			
		2																			
3		12				1		2				2					5	10			
		15						3				5		1		1		10			
		5										1						1			
1		3															2	2			
																	2	2			
		5		4		1		1										6			
3		14		6		1		3				6				1	2	19			
		1						1									1	2			
1		7						1		1		1		1			1	5			
3		9				4		2						5				11			
2		17		2		1				2		3		2		1		11			
1		2																			
19		42		2		1				1				2		1	13	29			
195	2	1,208	20	232	3	77	1	89	1	76		132	6	117		26		141		880	11



## REPORT ON THE SICKNESS AND MORTALITY

No. 4 —ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	FIRST QUARTER.												
	YEARS.....	1839.	1840.	1841.	1842.	1843.	1844.						
	MEAN STRENGTH..	73.	80.	68.	340.	603.	835.						
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.		
Fever.	Febris congestiva.....												
	Febris continua communis.....										2		
	Febris intermittens quotidiana.....					21		72			2		
	Febris intermittens tertiana.....	3		6		11		63		104	15		
	Febris intermittens quartana.....										2		
	Febris remittens.....	1		2		1		1		5	1	10	
Eruptive fevers.	Febris typhus.....												
	Erysipelas.....									2			
	Rubeola.....										14		
	Scarlatina.....												
Diseases of the organs connected with the digestive system.	Variola.....												
	Cholera Asiatica.....												
	Diarrhoea.....	3		12		2		14		32	1	13	
	Dysentery acuta.....	3		2				51		4		11	
	Dysentery chronica.....							48		4		2	
	Enteritis.....												
	Hepatitis acuta.....												
	Obstipatio.....	2						11		8		1	
	All other diseases of this system.....	1		10		4		6		16		15	
	Bronchitis, acuta et chronica.....	1				5				3		1	
Diseases of the respiratory system.	Catarrhus.....							91		72		42	
	Phthisis pulmonalis.....			1				1		1	1		3
	Pleuritis.....	2		3		1		4		10	1	8	
	Pneumonia.....	3								25	1	2	1
	All other diseases of this system.....			1		1		1		1			
	Cephalalgia.....							4				6	
	Delirium tremens.....									8		1	1
Diseases of the brain and nervous system.	Epilepsia.....			1				1		2		1	
	Neuralgia.....	1		1									
	All other diseases of this system.....											1	
	Gonorrhoea.....							4		1		13	
Diseases of the urinary and genital organs.	Stricture urethrae.....							1					
	Syphilis primitiva.....											8	
	Syphilis consecutiva.....											3	
	All other diseases of this class.....							1				3	
Diseases of the serous and exhalent vessels.	Ascites.....								1				
	All other diseases of this class.....										1	1	
Diseases of the fibrous & muscular structures.	Peritonitis.....			2									
	Podagra.....											1	
	Rheumatismus, acutus et chronicus.....	4		3		5		12		39		26	
	Pistula.....									1		1	
Abscesses and ulcers.	Phlegmon et abscessus.....			3		1				2		4	
	Ulcus.....					2		5		25		6	
	Ambustio.....			1						1		2	
	Amputatio.....												
Wounds and injuries.	Contusio.....	1		4		3		17		20		7	
	Fractura.....					1		2		3			
	Luxatio.....									6			
	Sub luxatio.....											6	
	Vulnus incisum.....	6		1				5		2			
	Vulnus laceratum.....											1	
	Vulnus punctum.....												
Miscellaneous.	Vulnus sclopeticum.....									1			
	Debilitas.....							5		3			
	Ehretas.....	5										10	
	Hæmorrhoids.....							2					
	Hæma.....							2		1			
	Morbidi cutis.....												
	Morbidi oculi.....	2				2		12		5		15	
	Scorbutus.....												
	All other diseases.....	8		10		5		38		11	1	8	
	Total.....		46		63		44		429	1	490	7	264

## AMONG THE TROOPS AT JEFFERSON BARRACKS AND ST. LOUIS ARSENAL.

FIRST QUARTER.																		AGGREGATE SINCE 1845.					
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.					
171.		386.		143.		238.		1,015.		176.		481.		341.		250.		345.		5,525.			
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.		
						5	5	2	2													7	7
																						2	
18	15		4		16		54		24		11		31		42		8		318				
16	35		19		61		12		8		20		20		12		30		435				
1							3											6					
6	1				1		3		1							1		33	1				
	1	1			1				1				7					10	1				
							3						2		1		1	9					
	1				10													25					
								11	1													1	
								81	39													81	39
8	11		10	1	30		251	4	2		16		23		10		31	1	471	7			
6	13		3		3		10				2		15		3		7		136				
							2		1		1	1						58	1				
								1														1	
								1														1	
								19			5		9		7		5		80				
1	5		5		69		14		4		3		2		3		6	2	164	2			
2	2						5	1										19	1				
23	56		21		68		176		15		42		36		16		29		690				
								3	1													7	5
								1			3		3		3	1			53	4			
								3		2	2	3	1						42	8			
1	1	1																6	1				
								3			7		1		1		1		23				
										13	2		4	2		1		2		29	5		
								2														7	
								1														3	
								4	1		1		2					8	1				
4	3						19				5		2		1		6		58				
																						1	
2				1		20		1		5		1		1		4		43					
								5		2								10					
2	3			1		2				2		2					2		18				
								1														1	1
								2														4	2
																						1	
								1							1	1			9				
																						1	
3	1			6		26		2		4		3		5				139					
																						2	
2	9		1		5		42		6		8		13		7			103					
1				5		13		1		2								60					
								6		1		3		2		1		17					
1																		1					
1	15		6		14		61		4		7		23		10		14		207				
								2														9	
											1							7					
4	6		1				5		2		4		1				2		31				
1	2		1		1		18				7		1				3		48				
								4							1			10					
								2		1								3					
								2														5	
								2		4		4		2		3			46				
4	3		1		7	1	8		3		7							48	1				
1	1		3				2				4		4					14					
								2														9	
								1		2		1		3		5		3		16			
1	1		2				7		1		1		4		4		1		58				
								1														2	
3	5		4		2		58		5		7		8	1	5		15		192	2			
112	203	2	99	1	360	10	1022	54	77	179	4	214	1	150	2	186	3	3,908	90				

## REPORT ON THE SICKNESS AND MORTALITY

No. 4. — ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.		SECOND QUARTER.									
		1839.	1840.	1841.	1842.	1843.	1844.				
		MEAN SICKNESS									
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fever.	Febris congestiva										
	Febris continua communis									1	
	Febris intermittens quotidiana	8				30		154		5	
	Febris intermittens tertiana		4	15	20	146				29	
	Febris intermittens quotidiana									4	
	Febris remittens	2		1	2	29	1			1	
	Febris typhus										
	Febris typhus retrodies										
	Erysipelas					1					
	Rubeola									8	
Eruptive fevers	Scarlatina										
	Variola										
	Varicella										
	Varioloid										
Diseases of the organs connected with the digestive system.	Cholera Asiatica										
	Diarrhoea	3		17	19	2	114	1	26		
	Dysentery acuta	10			49		99		3		
	Dysentery chronica				1		81	1			
	Hepatitis acuta										
	Hepatitis chronica										
	Obstipatio			3	25		23				
	All other diseases of this system	6		9	4		19	1	2		
	Bronchitis, acuta et chronica	1									
	Catarrhus	1		10	42		130		23		
Diseases of the respiratory system.	Phthisis pulmonalis				1		1		1	1	
	Pleuritis	2			4		17	1	4		
	Pneumonia	4							1	1	1
	All other diseases of this system									2	
	Cephalalgia						11		3		
Diseases of the brain and nervous system.	Dehrium tremens			1	4		4	4			
	Epilepsia									1	
	Neuralgia				2					1	
	All other diseases of this system				3	1	1	1	1		
	Gonorrhoea						25		10		
Diseases of the urinary and genital organs.	Stricture urethrae						3				
	Syphilis primitiva	1					5		1		
	Syphilis consecutiva				1						
	All other diseases of this class	1					3				
	Ascites										
Diseases of the serous and exhalant vessels.	All other diseases of this class						1				
	Pernio										
Diseases of the fibrous & muscular structures.	Podagra										
	Rheumatismus, acutus et chronicus	3		2	2		57		6		
	Phlegmon et abscessus	1	1	1			19		1		
	Ulcus	3		4	1		29		1		
Abscesses and ulcers.	Ambustio				1		2		1		
	Contusio	6	1	1	6		28		4		
	Fractura				1						
	Luxatio						3				
	Sub luxatio	2			5		14				
Wounds and injuries.	Vulnus incisum	9	2	3	2		15				
	Vulnus laceratum									1	
	Vulnus punctum										
	Vulnus sclopetricum						1				
	Debilitas				1		6				
	Ebrietas	2	4				38		1		
	Hæmorrhoids				1		27				
	Herma						3		1		
	Morbi cutis									1	
	Morbi oculi			2	4		39		1		
Miscellaneous.	Scorbutus						1				
	All other diseases			21			14		2		
Total		65	12	90	231	3	1163	11	146	3	



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## REPORT ON THE SICKNESS AND MORTALITY

No. 4—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	THIRD QUARTER.												
	YEARS.....	1839.	1840.	1841.	1842.	1843.	1844.						
	MEAN STRENGTH.....	58.	677.	127.	164.	987.	56.						
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.		
Fevers.....	Febris congestiva.....												
	Febris continua communis.....			10		2							
	Febris intermittens quotidiana.....	14		11	17	1	39	117		5			
	Febris intermittens tertiana.....			65		52		14		95		17	
	Febris intermittens quartana.....												
	Febris remittens.....	4		43	1	16	2	4		7	2	22	
	Febris typhus.....												
Eruptive fevers.....	Febris typhus icterodes.....					1							
	Erysipelas.....					2							
	Rubeola.....												
Diseases of the organs connected with the digestive system.	Varioloid.....												
	Cholera Asiatica.....												
	Diarrhoea.....	17		181		45	3	27	1	258	1	9	
	Dysentery acuta.....	3		201	2	14		2		39		3	
	Dysentery chronica.....					4				12			
	Hepatitis acuta.....											2	
	Hepatitis chronica.....			2									
Diseases of the respiratory system.	Obstipatio.....			14		8		9		21		1	
	All other diseases of this system.....	5		11		11		4		25		4	
	Bronchitis, acuta et chronica.....	1											
	Catarrhus.....			56		17		2		284			
	Phthisis pulmonalis.....							1		1	1		
	Pleuritis.....	1		4						5			
	Pneumonia.....			1						1			
Diseases of the brain and nervous system.	All other diseases of this system.....	1				1				1			
	Cephalalgia.....			3		1				38			
	Delirium tremens.....	1		2				2					
	Epilepsia.....			1						3			
	Neuralgia.....							1					
	All other diseases of this system.....									3			
	Gonorrhoea.....					3		3		20		3	
Diseases of the urinary and genital organs.	Structura urethrae.....												
	Syphilis primitiva.....			1						5		1	
	Syphilis consecutiva.....			3									
	All other diseases of this class.....			1						2			
Diseases of the serous and exhalent vessels.	Ascites.....					2	1						
	All other diseases of this class.....									1			
Diseases of the fibrous & muscular structures.	Pernio.....												
	Podagra.....												
	Rheumatismus, acutus et chronicus.....	1		9		2		6		32		1	
Abscesses and ulcers.....	Fistula.....							1					
	Phlegmon et abscessus.....			21				5		18		1	
	Ulcus.....	2		4		11		3		2		1	
	Ambustio.....			2		9		1		2			
	Contusio.....	10		11		10		8		32		2	
	Fractura.....			1						1			
	Luxatio.....	1				1							
Wounds and injuries.....	Punctio.....			10									
	Sub luxatio.....							5		12		1	
	Vulnus incisum.....	6		5		6		6		4			
	Vulnus laceratum.....												
	Vulnus punctum.....									1			
	Vulnus sclopeteum.....			2									
	Debilitas.....					10		3		4			
Miscellaneous.....	Ebrietas.....	1								50		2	
	Hæmorrhoids.....			2		1				11		2	
	Hernia.....					4				6			
	Morbi cutis.....												
	Morbi oculi.....	1		23		17		1		32			
	Scorbutus.....					1	1						
	All other diseases.....			34		23		4		17		1	
Total.....		69		731	3	288	8	154	1	1,162	4	108	

AMONG THE TROOPS IN THE MIDDLE DIVISION.

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AMONG THE TROOPS AT JEFFERSON BARRACKS AND ST. LOUIS ARSENAL.

THIRD QUARTER.																				AGGREGATE STRENGTH.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.											6,245.	
191.	354.	214.	1,837.	353.	310.	288.	194.	182.	253.												
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
			6	6																6	6
																				12	
30	90	47	14	46	46	100	63	1	22	1									662	2	
62	74	111	33	10	119	54	35	21	18										810		
			2																	2	
10	1	2	14	1	15	9	14		5	3	9								174	10	
			8	3		1	1	2	2										13	4	
																			1		
						1													3		
		12	5	1															13	5	
					1														1		
				6	5	180	21	2	1	3	4	1	1	4	2				196	34	
8	71	112	222	28	139	1	24	3	33	40	19	57							1,962	37	
6	41	16	20	5	7	1	13	1	11	4	2	2							384	9	
					4	1	12												32	1	
1										1									4		
																			2		
10	23	12	22	14	19	17	9	11	6										196		
5	7	26	10	15	11	3	7	1	3										148		
	1		2																4		
15	20	11	43	1	9	19	2		4	3									485	1	
				5	8	1	1	1											9	10	
			2	1	1	4													17	1	
																			3		
						1		1		1									6		
6	2	7	2	7	5														71		
1	1			2	4	1		1	1										15	1	
																			5		
1				1															3		
				1	1														8	4	
2	4	1	3	4	2	1	2	1											49		
																			1		
	1	1	10	2	3		1		4										29		
					2	1													6		
	1	6		2			1		1										14		
																			2	1	
				1															2		
2	3	1	15	7	16	3	2	2	2										104		
			1																2		
5	15	14	9	20	22	5	3	14	4										156		
	2	5	5	5	4														44		
2	1			1	1														19		
1	23	12	6	6	15	7	8	6	25										183		
			3						3										8		
			2	1	1														6		
																			10		
4	9	2		10	8		2												53		
2	1	2	2	2	10		3												49		
	2	4	1		5			2	2										16		
																			2		
																			5		
	5	7	3	9	6	4	8	2	14										70		
4	1		1	12	21				1										92	1	
	1	3		1		1	1												23		
	2		3	1	3														20		
		4		1															9		
	11	2	2	1	3	1	2												46		
	2																		3	1	
2	3	8	1	12	10	1	5	4	7	5									186	1	
179	2	416	428	5	476	53	358	10	599	28	270	1	203	5	126	4	171	5	5,761	129	



## REPORT ON THE SICKNESS AND MORTALITY

## No. 4.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	FOURTH QUARTER.												
	YEARS .....	1839.	1840.	1841.	1842.	1843.	1844.						
	MEAN STRENGTH.....	67.	68.	149.	648.	947.	45.						
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers .....	Febris congestiva.....												
	Febris continua communis.....		1		3	1							
	Febris intermittens quotidiana.....			10	169	34	12						
	Febris intermittens tertiana.....	8	17	51	196	49	4						
	Febris intermittens quartana.....					1							
	Febris remittens.....	5	4	6	1 57	5	11	1					
Eruptive fevers .....	Febris typhus.....												
	Febris typhus icterodes.....				2	1							
	Erysipelas.....				2	3							
Diseases of the organs connected with the digestive system.	Rubella.....												
	Scarlatina.....												
	Cholera Asiatica.....												
	Diarrhoea.....	9	3	2	36	1 114	3	21	1	3			
	Dysentery acuta.....				17	8	1	5					
	Dysentery chronica.....				2	4							
Diseases of the respiratory system.	Enteritis.....							1					
	Hepatitis acuta.....												
	Hepatitis chronica.....					3	2						
	Obstipatio.....				7	15	3						
	All other diseases of this system.....	1	3	1	13	38	1	1					
	Bronchitis acuta et chronica.....												
Diseases of the brain and nervous system.	Catarrhus.....	12			50	64	78	3					
	Phthisis pulmonalis.....												
	Pleuritis.....	2	1	3	24	9	2	1					
	Pneumonia.....					33	4	10	1				
	All other diseases of this system.....				2		2						
	Cephalalgia.....		1	10	1	9							
Diseases of the urinary and genital organs.	Delirium tremens.....		2			2	1	1	1				
	Epilepsia.....					3		1					
	Neuralgia.....							7					
	All other diseases of this system.....					3		2					
	Gonorrhoea.....	1		7	5	6							
	Stricture urethrae.....							2					
Diseases of the serous and exhalant vessels.	Syphilis primitiva.....					2	4						
	Syphilis consecutiva.....	1											
	All other diseases of this class.....							1					
	Ascites.....												
	All other diseases of this class.....					1							
	Periton.....												
Diseases of the fibrous & muscular structures.	Podagra.....												
	Rheumatismus, acutus et chronicus....	2	1	5	25	29	1						
	Fitula.....							1					
	Phlegmon et abscessus.....	1			2	14							
	Ulcus.....	1		6	30	2	1						
	Amblyopia.....					2	3						
Abscesses and ulcers....	Contusio.....		10	8	31	9							
	Fractura.....				1					1			
	Luxatio.....					5							
	Punctio.....												
	Sub luxatio.....					2	7						
	Vulnus incisum.....	7		2	9	7							
Wounds and injuries....	Vulnus laceratum.....						3						
	Vulnus punctum.....						3						
	Vulnus sclopetarium.....				1								
	Debilitas.....				8	4							
	Ebrietas.....						16						
	Hæmorrhoea.....			1	6	4							
Miscellaneous .....	Hernia.....			1	3	6							
	Morbidi cutis.....				1	1							
	Morbidi oculi.....		2	8	11	8							
	All other diseases.....	7	8	9	23	1	5						
	Total .....	57	53	2	242	2	884	17	417	7	32		

AMONG THE TROOPS IN THE MIDDLE DIVISION.

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AMONG THE TROOPS AT JEFFERSON BARRACKS AND ST. LOUIS ARSENAL.

FOURTH QUARTER.																					AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.		6,320.		
378.		477.		307.		900.		133.		364.		761.		189.		241.		646.				
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
		7	5			1	1													8	6	
						1														6		
72		52		28		51		23		10		71		48		12		33		625		
82		130		133		6		15		22		44		19		16		76		868		
																				1		
2		1				2				2						4		2		96	7	
1		1		1						1		15								19		
																				2	1	
																				5		
				4																4		
														1						1		
										3	2	1	1					7	5	11	8	
47		152		138		160	4	13		27		90		24		19		186		1,042	11	
39		39	1	24	5	2		1		16	2	14		2		7		7		182	8	
						8	1	1												15	1	
																		1		1	1	
2						1		2												8	2	
11		44		20		4				2		2		2		3		65		178		
9		22		42		13	1	1		5		8		5		3		17		182	2	
						33	1			1		1								35	1	
34		136		79		91		4		9		82		21		12		90		765		
		1	1		1					2	1		1							3	4	
				3	1	3						2		3						51	3	
4	1					2	2							1	1			7	2	57	11	
1	1					1														6		
7		1		4		9						2				1				45		
						10	1	2			1	2	1	1				3	1	23	6	
				2		2												1		9		
						1				1										9		
						1	3	1		2		1						3		14	2	
13		1		1		14		2		1		12		1		7		11		82		
						3														5		
						12				5		3						2		28		
				1		2				1		2								7		
2		1	1	1		3				1				1				2		12	1	
				1																1		
						2				1		1						1		6		
										1										1		
4		4		2		24		2		7		10		2		2		12		132		
1																				2		
17		27		3		26		3		7		22		11		10		37		180		
1		6		7		23				6										83		
3						6				4		3						3		24		
17		23		10		22		1		10		23		7		5		103		279		
		1				3	1					2						1		9	1	
						1										1				7		
										2										2		
8		16		2		4		1		8						2		10		69		
3		1		1		21				8		13		3				5		80		
7		2		1								2		1						16		
								1				1		1				1		7		
				1		1								1				3		7		
3		42		16		4		4				4		11		2		30		128		
1				1		10		1		11				1		2		1		44		
		4				3				2		1						1		22		
				1		1		1								1		5		19		
		1										3		1				3		10		
2		11				13		2		1		3		1		1		6		69		
5		4		2		41		5		3	1	8		7	1	2		16		148	3	
398	2	730	8	529	8	646	13	85		182	7	448	3	156	2	132		750	9	5,741	80	

## REPORT ON THE SICKNESS AND MORTALITY

## No. 5.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

		FIRST QUARTER.														
CLASSES OF DISEASES.		YEARS.....	1839.	1840.	1841.	1842.	1843.	1844.								
		MEAN STRENGTH.....	399.	173.	319.	439.	453.	486.								
		SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.		
Fever.....	Febris congestiva.....										1					
	Febris continua communis.....						1			2						
	Febris intermittens quotidiana.....	19		10		4				30		31				
	Febris intermittens tertiana.....			13		16		36		41		28				
	Febris intermittens quartana.....									2						
	Febris typhus.....	1				10		1								
Eruptive fevers.....	Erysipelas.....			3		1										
	Rubeola.....															
	Scarlatina.....															
	Variceloid.....															
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....															
	Diarrhoea.....	55		9		43		27		8		12				
	Dysentery acuta.....			1		16		13		4		2				
	Dysentery chronica.....									1						
	Enteritis.....	1														
	Hepatitis acuta.....			1		3										
Diseases of the respiratory system.	Hepatitis chronica.....															
	Obstipatio.....	16				12		5		4		15				
	All other diseases of this system.....	44		2		13		9		3		17				
	Bronchitis acuta et chronica.....									4						
	Catarrhus.....	69		29		86		80		73		44				
	Phthisis pulmonalis.....											1		1		
Diseases of the brain and nervous system.	Pleuritis.....	1		1		7		1		8		7				
	Pneumonia.....	2				9		5		2						
	All other diseases of this system.....					1						1				
	Cephalalgia.....	13		1		10		5		4		10				
	Deltrem tremens.....					9				1		2		1		
	Epilepsia.....					2										
Diseases of the urinary and genital organs.	Neuralgia.....	3								1						
	All other diseases of this system.....					1		1				1				
	Gonorrhoea.....	16		5		8		5				3				
	Stricture urethrae.....	1				3		1								
	Syphilis primitiva.....	2														
	Syphilis consecutiva.....					2		1								
Diseases of the serous and exhalant vessels.	All other diseases of this class.....	11		4				6		1		9				
	Ascites.....									1						
	All other diseases of this class.....	1				1		2								
Diseases of the fibrous & muscular structures.	Peritonitis.....			2		9				12						
	Podagra.....							1								
	Rheumatismus, acutus et chronicus.....	44		8		10		23		19		25				
	Pistula.....							1		1						
Abscesses and ulcers.....	Phlegmon et abscessus.....	2		9		27		25		16		11				
	Fleus.....	3		1		9		5		7		10				
	Ambustio.....	2				2		2				1				
	Contusio.....	37		8		15		44		29		44				
	Fractura.....	1						2				1				
	Luxatio.....			6								1				
Wounds and injuries.....	Subluxatio.....	7				14		7		7		10				
	Vulnus incisum.....	10		5		10		12		5		8				
	Vulnus laceratum.....											3				
	Vulnus punctum.....							5		4		2				
	Vulnus sclopetarium.....			1	1	1		5	2							
	Delatitas.....									3		1				
Miscellaneous.....	Eclampsia.....	17		3				3		12		13				
	Hæmorrhoea.....	5		1				2		1		1				
	Hæma.....	1								1		1				
	Morbidi cutis.....	10				3		5		4						
	Morbidi oculi.....	6		1		7		13		12		2				
	Scorbutus.....							1								
All other diseases.....		74		17		22		14		23		14				
Total.....		474		143		386		369		347		330		2		



## AMONG THE TROOPS AT POSTS IN THE MIDDLE INTERIOR—WEST.

FIRST QUARTER.																		AGGREGATE STRENGTH.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.									5,647.	
472.	341.	116.	198.	430.	289.	450.	277.	447.	358.										
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
																		1	
	1																	4	
22	60	14	4	11	2	4	12	14	4									241	
44	64	15	13	2	7	19	25	47	31									401	
	1					1												4	
2	2		3	1			2	1										23	
					2													2	
1			1	1	1													8	
	2																	2	
				1														1	
				2														2	
				6	2													6	2
	5	1	7	43	24	34	12	15	11									306	1
9		2		18	2		2	5	9									87	2
							2		2									5	
	2	1				1	1											4	2
	2						1											8	
				1		1												3	
11	10		1	1	1	19	2	4	15									116	
23	11	4	8	11	4	6	9	3	7									174	1
1			2	1			10	1	68									86	1
20	6	5	12	75	22	21	23	23	8									656	
1	1		1	1	2	1	1	3										5	10
10	11	1	1		1		5	6	3									63	
	1	1	2	2	2	1	1	3										29	3
		1																11	
6	6	1	2	5	5	1	2	1	5									80	1
1			7	1	2		2	10	2	1								37	2
				1		1												5	
3	3		1	1	2		1											15	
1			3	1	1		3	1	2									14	1
	6			6	2													51	
																		5	
1	1	1		1														6	
					1			1	1									6	
2		3		2	3	3	1	1										46	
							1											2	
							1											7	
				40	2		8	2	9									84	
								1										2	
14	23	2	5	23	11	11	14	16	24									272	
																		2	
15	6	2	4	17	33	39	10	29	5									250	
4	3		3	11	1	8	2	5	15									87	
3				1	1		4	1	1									18	
56	23	6	2	40	23	17	14	36	24									418	
	1			2	1	4		1	1									14	
2			1		3		4											17	
2	11			8	13	14	3	11	21									128	
13	1		1	9	7	2	3	10	7									105	
1	1			4		9	3	3	7									31	
5				1	1	1	1		3									22	1
1	1	1	1	2	1	2	1											15	7
2				6		1	1											14	
18	10	1		6		5	8	4	14									114	
1	3			3	1	1	1	1	2									23	
			1	1	1			1	1									8	
	1		2						2									27	
5	2	1		3		1	1	4	1									59	
	1					12	1											14	1
24	13	4	8	20	24	42	8	13	7									327	4
324	1	295	2	66	96	5	392	6	206	1	284	8	204	7	341	1	316	1	4,573

## REPORT ON THE SICKNESS AND MORTALITY

## No. 5.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	YEARS.....	SECOND QUARTER.							
		1839.	1840.	1841.	1842.	1843.	1844.		
	MEAN STRENGTH.....	338.	141.	300.	297.	420.	466.		
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fever	Febris congestiva.....								
	Febris continua communis.....			2					
	Febris intermittens quotidiana.....	62	12	5	7	48	58		
	Febris intermittens tertiana.....		11	17	70	50	86		
	Febris intermittens quartana.....		1		1				
	Febris remittens.....		5	11	2	2	1		
Eruptive fevers	Febris typhus.....								
	Erysipelas.....	3	7	2					
	Rubella.....								
Diseases of the organs connected with the digestive system.	Varicella.....								
	Cholera Asiatica.....								
	Diarrhoea.....	40	8	29	29	17	16		
	Dysentery acute.....		21	19	14	6	4		
	Dysentery chronic.....			1		1			
	Enteritis.....					1			
	Hepatitis acuta.....	2	2	1	1	1			
	Hepatitis chronic.....			1					
	Obesipation.....	3	9	11	12	3	13		
	All other diseases of this system.....	17	12	29	11	11	30		
Diseases of the respiratory system.	Brucellitis, acuta et chronic.....			2		4			
	Catarrhus.....	9	2	6	22	39	24	1	
	Phthisis pulmonalis.....					1	1		
	Pleuritis.....	3	3	4	10	10	8		
	Pneumonia.....			3		3			
	All other diseases of this system.....	6	1	4		3			
Diseases of the brain and nervous system.	Cephalalgia.....	10	6	11	15	9	14		
	Delirium tremens.....			8	1	1	2	1	
	Epilepsia.....			3		2	3		
	Neuralgia.....	1					3		
	All other diseases of this system.....	1		2		1			
	Gonorrhoea.....	12	3	11	3	4	7		
Diseases of the urinary and genital organs.	Syphilis primitiva.....		1	1	1		1		
	Syphilis consecutiva.....		1			2			
	All other diseases of this class.....	6	1	2		1	7		
Diseases of the serous and exhalant vessels.	Ascitis.....								
	All other diseases of this class.....								
Diseases of the fibrous & muscular structures.	Periton.....					1			
	Podagra.....								
	Rheumatismus, acutus et chronicus.....	20	4	6	14	16	26		
	Pistula.....								
Abscesses and ulcers....	Pleurum et abscessus.....	34	15	34	1	18	15		
	Ebons.....	7	11	3		9	3		
	Abcessus.....		1	1	2		2		
	Cancreo cerebri.....								
Wounds and injuries....	Contusio.....	28	15	31	34	24	41		
	Fractura.....	2				2	1		
	Luxatio.....	1							
	Punctura.....								
	Subluxatio.....	5	4	10		7	3		
	Vulnus incisum.....	6	5	8	3	5	13		
	Vulnus laceratum.....					1	2		
	Vulnus punctum.....				1	3	1		
	Vulnus sclopeticum.....			2			2		
	Debilitas consecutiva.....			4	3	5	4		
Miscellaneous.....	Ebruitas.....	5	1	5		11	7		
	Hæmorrhoids.....	2	2	2		1	1		
	Hæma.....		1						
	Morbiculis.....		1			6			
	Morbiculis.....	6	4	6	15	11	10		
	Scorbutus.....				1	2	2		
All other diseases.....		28	8	5	10	23	1	18	
Total.....		319	178	311	1	287	368	3	428

AMONG THE TROOPS IN THE MIDDLE DIVISION.

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AMONG THE TROOPS AT POSTS IN THE MIDDLE INTERIOR.—WEST.



## REPORT ON THE SICKNESS AND MORTALITY

No. 5.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	YEARS.....	THIRD QUARTER.													
		1839.		1840.		1841.		1842.		1843.		1844.			
		MEAN STRENGTH.....		318.		260.		282.		430.		415.		363.	
		SPECIFIC DISEASES.		Cases	Died.	Cases	Died.	Cases	Died.	Cases	Died.	Cases	Died.	Cases	Died.
Fevers.....	Febris congestiva.....							2	2	4	1				
	Febris continua communis.....									1		1			
	Febris intermittens quotidiana.....	115		22		10		50		139		97			
	Febris intermittens tertiana.....			22		21		13		84	1	45			
	Febris intermittens quartana.....			3		2				6					
	Febris remittens.....	15		9		24	3	2							
Eruptive fevers.....	Febris typhus.....														
	Erysipelas.....					6		1							
	Rubeola.....														
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....														
	Diarrhoea.....	83		50		73		37		29		21			
	Dysentery acuta.....			76		50		19		7		21			
	Dysentery chronica.....			1											
	Enteritis.....														
	Hepatitis acuta.....	2		1		2		1							
	Hepatitis chronica.....					2									
	Obstipatio.....	6		16		22		18		9		21			
	All other diseases of this system.....	21		45		60		15		17		21			
	Bronchitis, acuta et chronica.....			1											
Diseases of the respiratory system.	Catarrhus.....	6		8		15		6		187		13			
	Phthisis pulmonalis.....	1	1							1					
	Pleuritis.....	1		4		4		5		2		10			
	Pneumonia.....			4						1					
	All other diseases of this system.....			2						2					
	Cephalalgia.....	21		14		3		12		10		13			
Diseases of the brain and nervous system.	Delirium tremens.....			6				4				2			
	Epilepsia.....	1				1		2							
	Neuralgia.....					2						1			
	All other diseases of this system.....		1	5		1						1			
	Gonorrhoea.....	2		3		1		7		3		11			
Diseases of the urinary and genital organs.	Syphilis primitiva.....	1		2				3							
	Syphilis consecutiva.....			2								1			
	All other diseases of this class.....	5		4						5		1			
	Ascites.....											1			
Diseases of the serous and exhalent vessels.	All other diseases of this class.....	2		1		1				1					
	Pernio.....														
Diseases of the fibrous & muscular structures.	Podagra.....														
	Rheumatismus, acutus et chronicus.....	12		16		12		15		9		24			
	Fistula.....			1											
Abscesses and ulcers.....	Phlegmon et abscessus.....	26		74		43		43		17		9			
	Ulcus.....	2		19		11		4		13		1			
	Ambustio.....			1				1				1			
	Amputatio.....														
Wounds and injuries.....	Concussio cerebri.....					1						1			
	Contusio.....	17		24		16		52		22		32			
	Fractura.....							2		3					
	Luxatio.....											2			
	Sub luxatio.....	11		17		10				1		2			
	Vulnus incisum.....	6		13		10		14		4		8			
	Vulnus laceratum.....			1		9				2		4			
	Vulnus punctum.....							1		5		1			
	Vulnus sclopeticum.....			1		1						2			
	Debilitas.....			1				7		2		7			
Miscellaneous.....	Ebrietas.....	12				4		25		9		12	1		
	Hæmorrhoids.....	2		5		6		1				4			
	Hernia.....	1						2		2					
	Morbi cutis.....	1		1		4		5		2		10			
	Morbi oculi.....	4		3		22		19		13		6			
	Scorbutus.....									1					
	Squendum.....														
All other diseases.....	47		8	1	17		20	1	23		14				
Total.....		426	2	486	1	466	3	408	3	636	2	421	1		

## AMONG THE TROOPS AT POSTS IN THE MIDDLE INTERIOR WEST.

THIRD QUARTER.																		AGGREGATE STRENGTH.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.										
278.	128.	171.	174.	275.	156.	298.	347.	309.	338.									4,572.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
1																		7	3
1	1					3												7	
252	81	62	8	7	33	74	87	75	11									1,123	
99	51	42	13	16	10	113	47	58	32									666	1
1		1	1		4													18	
18	4	35		2	18	9	8	8										152	3
			1															8	
		45					1											46	
				15	5	11	6	5	3									31	14
20	21	26	26	84	39	48	38	37	44									676	
11	12	14	2	2	1	1	6	2	8	35	8							272	4
				1		4												6	
							2											2	
							1											7	
						1												3	
20			1		4	11	7	18	26									179	
8	5	8	5	5	10	8	21	6	3									261	
		2		2		2	1	1	5									14	
3	2	3	11	5		1	5		3									268	
	1		1	1		1		2	1									8	2
1	1	2	1	1				3										35	
		13	2		1	1												22	
			1			1												6	
5	3		3	8		5	7	5										109	
1		1		5	1	2	4	4	1	1								31	1
				2	1	1												8	
2	1																	6	
	2		3	2	1	3	1	1	1									19	3
4		3	1			5	1	1										42	
	1		1		5	1												14	
2																		5	
2		2	1	2		1	3	4										30	
			3	1														5	
1					1													7	
									1									1	
10	4	1	7	5	6	4	9	7	7									148	
								1	1									3	
5	4		1	9	10	10	10	16	19									296	
11			2	11	2		6	4	4									90	
		1		4		2		1	1									12	
					1													1	
																		2	
6	6	11	8	10	10	7	12	18	14									265	
					2		2	3										12	
			1															3	
9	2		1	3	6	2	3	4	7									78	
4		2	2	2	2	1	2	3	5									78	
4			2	5	3	6	13	10	1									60	
1				1	1	1	3	1	4									18	1
2				1														7	
2		2	1		5	1												28	
6	2	4	2	6	4	2	4		5									97	1
2	2		1	1		1	3	4	2									34	
		1						1										7	
1	1				2	3	1	3	4									38	
2		1		7	3	6	3	1	7									97	
								1										2	
				1	1													1	1
11	8	14	8	9	7	3	5	7	4	1								295	3
528	215	296	120	236	8	203	8	354	6	318	343	220	2					5,676	37

## REPORT ON THE SICKNESS AND MORTALITY

No. 5 — ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.		FOURTH QUARTER.															
		YEARS.....		1839.		1840.		1841.		1842.		1843.		1844.			
		MEAN STRENGTH.....		279		321		389		433.		510.		465.			
SPECIFIC DISEASES.		Cases.		Died.		Cases.		Died.		Cases.		Died.		Cases.		Died.	
Fevers.....	Febris continua communis.....				2		8		1								
	Febris intermittens quotidiana.....				15		11		103		146		106				
	Febris intermittens tertiana.....	58		14		79		30		55		51					
	Febris intermittens quartana.....				1					1							
	Febris remittens.....	33	1	10						1		2					
Eruptive fevers.....	Febris typhus.....																
	Erysipelas.....				2		1				1						
	Rubeola.....																
	Scarlatina.....																
Diseases of the organs connected with the digestive system.	Varicella.....																
	Cholera Asiatica.....																
	Diarrhoea.....	68		53		27		37	1	24		18					
	Dysentery acuta.....	1		33		18		4		6		6					
	Dysentery chronica.....																
	Enteritis.....						1				1						
	Hepatitis acuta.....				1						1						
Diseases of the respiratory system.	Hepatitis chronica.....				2				1								
	Obstructio.....	2		17		21		1		9		16					
	All other diseases of this system.....	11		32		21		4		20		18					
	Bronchitis, acuta et chronica.....																
	Catarrhus.....	20		67		63		53		48		37					
	Phthisis pulmonalis.....				2						1						
	Pleuritis.....	4		10		1		5		1		6					
Diseases of the brain and nervous system.	Pneumonia.....	1		9		1		2	1	2							
	All other diseases of this system.....	2									1						
	Cephalalgia.....	5		9		4		3		11		2					
	Delirium tremens.....							1	1	3		1					
	Epilepsia.....				1		1										
	Neuralgia.....						1				1		2				
	All other diseases of this system.....	2				1	2		1			1	1				
Diseases of the urinary and genital organs.	Gonorrhoea.....	4		8		2		4		1		7					
	Stricture urethrae.....								1								
	Syphilis primitiva.....											1					
	Syphilis consecutiva.....				2						1						
Diseases of the serous and exhalant vessels.	All other diseases of this class.....	6		4		2		2		5		3					
	Ascites.....											2					
Diseases of the fibrous & muscular structures.	All other diseases of this class.....																
	Perio.....	1				1		6									
	Podagra.....					1											
	Rheumatismus, acutus et chronicus.....	14		12		17		15		16		14					
Abscesses and ulcers.....	Fractura.....																
	Phlegmon et abscessus.....	10		11		27		18		13		11					
	Fleus.....	6		11		13		13		27		5					
	Ambustio.....			4		2		1				1					
	Contusio.....	11		32		19		32		30		50					
	Fractura.....			2							2		1				
	Luxatio.....										2		1				
Wounds and injuries.....	Punctio.....			5													
	Sub luxatio.....	7		14		13		5		10		3					
	Vulnus incisum.....	4		18		5		4		9		10					
	Vulnus laceratum.....										13		2				
	Vulnus punctum.....										6	1	2				
	Vulnus sclopetarium.....			1							3		1				
	Debilitas.....			2		2		1		2		1					
Miscellaneous.....	Libertas.....	4				1		10		23		15					
	Hæmorrhoids.....	4		1		2		1		1		3					
	Remora.....	1						1				1					
	Morbi cutis.....	6						2		7		2					
	Morbi oculi.....	2		6		11		16		11		1					
	Scorbutus.....										1						
	All other diseases.....	23		19	1	7		17		12		21					
Total.....		320	1	465	2	385		395	3	528	1	427	1				



AMONG THE TROOPS IN THE MIDDLE DIVISION.

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AMONG THE TROOPS AT POSTS IN THE MIDDLE INTERIOR - WEST.

FOURTH QUARTER.																			AGGREGATE STRENGTH.		
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
353.		121.		225.		200.		218.		456.		273.		406.		390.		308.		5,367.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
																1		1		13	1
276		62		22		5		20		37		103		26		21		48		1,001	
87		40		30				12		15		61		45		79		19		675	
3				3												2				10	
2				1				1		4		7		5		1				67	1
						3		2												5	
		1				1		1						1						8	
																		1		1	
11		3		22		18		17		63		37		51		37		73		559	1
1		1		3		4		1		12				24		16	1			130	1
										5				3						8	
										1										3	
2						1						1								6	
				1																4	
2				1				2		7		8		2		13		13		114	
7		1		3		1		2		6		5		17		1		3		152	
										11		9		2		48		28		98	
28		1		9		30		12		15		2		60		1		5		451	
														1		1		1		6	
3				2		2						3		13		8		1		59	
				1				1				2		4		2	1			25	2
														1						4	
4				2		1		3				4		6		3				57	
				1						2	1	4		4		1		1		18	2
								1		1		2		2						8	
1												1						3		9	
				2	1	1		1		1		2		1		2				16	3
4		1		1		2				2		1		3		3		2		45	
				1		1												1		4	
1						2				1										5	
												1		4		1				9	
				1				1		3				2		2		2		33	
				1				1		1		1						1	1	4	1
																				4	
						13		1		3		2		8						35	
																				1	
9		1		5		4		24		2		16		27		22		15		213	
13		4		5		7		22		22		12		18		12		14		253	
4				6		4		5		7		6		2		18		6		133	
1		1				1		2		1				1		3				18	
21		5		16		21		22		13		3		23		15		35		318	
1								1		2										9	
				1								1		1						6	
																				5	
12						4				10		6		6		28		19		137	
4		1		2		4		4		3		5		11		3		5		92	
4						1				21		4		2		21		14		82	
1										2		2				2		1		16	1
										1	1	1						3		10	1
1				1		1						2		3		2		2		20	
8				1		1		2		2		2		1		1				71	
2										2		3		3		3		2		27	
				4				1												9	
		1						1								2		1		22	
2				2		1		4		5		4		4		5		7		81	
		1																		2	
33		5		10	1	10		7		16		5		1		9		19		224	2
548		129		160	2	144		174		299	2	329		388		390	2	346	2	5,427	16



# SOUTHERN DIVISION.

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## SOUTH ATLANTIC REGION.

THIS region represents that portion of the Atlantic coast lying between the 30th and 35th degrees of latitude. It includes four military stations—Forts Macon, Johnston, and Moultrie, and Oglethorpe Barracks.

### FORT MACON.

Fort Macon, the most northern of this class, is situated on the point of Bogue island, near Beaufort, North Carolina, in latitude  $34^{\circ} 41'$ , longitude  $76^{\circ} 40'$ ; having an altitude of 40 feet above the level of the ocean, to which it is directly exposed. Since 1839 it has been only occasionally occupied by troops, and since 1849 has been abandoned.

### FORT JOHNSTON.

Fort Johnston is situated in the town of Smithville, North Carolina, immediately on the Atlantic coast, three miles from the mouth of Cape Fear river, latitude  $34^{\circ}$ , longitude  $78^{\circ} 5'$ . There are some marshy lands within the distance of half a mile. Since 1839 this post has been garrisoned at irregular intervals.

### OGLETHORPE BARRACKS.

This military post is in the suburbs of Savannah, which is distant about 12 miles, in a direct line, from the ocean. Situated upon a sandy plain, elevated about 40 feet above low-water mark, this city stands upon the southern side of the river of the same name. This ridge extends upwards of a mile along the river, terminating abruptly. At the depth of twenty or thirty feet, fine water is obtained. The city is bounded on the east and west by alluvial soil, called, in the language of the country, *tide swamp*; being subject to inundations by the ordinary spring tides. It is consequently well adapted to the cultivation of rice. The city, divided by numerous and wide streets intersecting each other at right angles, is open and spacious; and, being planted with the pride of India (*melia azedarach*), the long-continued heats of summer, moderated by the sea-breeze, prove less oppressive than in some more northern towns.

### MEDICAL TOPOGRAPHY AND DISEASES OF FORT MOULTRIE.\*

By Surgeon John B. Porter: 1854.

In the report of sick for Fort Moultrie for the quarter ending December 31st, 1852, no remarks were made in relation to the severe epidemic, (yellow fever,) for the reason that it was intended to give a full account of the disease, both at Fort Moultrie and on Sullivan's island; and I now proceed to the undertaking.

\* Upon an examination of the material relating to the diseases of the army, which had accumulated in the Surgeon General's office during the period included in this report, it was found necessary to exclude certain portions, in order to confine this work within reasonable limits. It was therefore determined to discard the numerous special reports of medical and surgical cases of "unusual interest," and to omit the details of *cases*, tabular reports of sick, and registers of meteorological observations, when forming part of the reports on the topography and diseases of the several stations.

This report, however, constitutes an exception to that rule; and necessarily so, for the reason, that the cases form



In large cities, it is often difficult to trace the origin of disease; but in small places, where the movements of every person can be easily known, the facts are often so evident that little doubt exists in relation to its causes. This is especially the fact in relation to the yellow fever of 1852, on Sullivan's Island and at Fort Moultrie; the movements of every person attached to the garrison, in any sort of capacity, being easily traced at the commencement of the epidemic.

Sullivan's Island is on the north side of the small bay which forms Charleston harbor, making a part of it, the west end or cove being between four and five miles from the city of Charleston, extending to the east about three miles, and being from one quarter of a mile to one and a half or two miles in breadth. It is a sandy island, and is but slightly elevated above the level of the sea; severe storms having been known to carry the waves over it so as almost to submerge it. Boats have been rowed from Fort Moultrie down Middle street, and the residents of the island were obliged to shelter themselves in the fort. The superficial geology and medical topography, sufficient for all practical purposes to the physician, is soon given: sand on the surface, and black sand or mud below this. In dry seasons, water is found from a few inches to two or three feet beneath the surface; and in wet seasons, the whole island, except the hills of sand-drift, seems to be nearly under water. From the main land on the north, the island is separated by a channel about one-half or three-fourths of a mile wide, which is nearly fordable at low water.

Fort Moultrie is on the south side of the island, on the main channel or entrance into Charleston harbor, being nearly one mile from the cove, and between five and six miles from the city of Charleston. Charleston (St. Michael's church) is in latitude  $32^{\circ} 46' 33''$  N.; longitude  $79^{\circ} 57' 27''$  W. The fort, according to the army report of 1840, is in latitude  $32^{\circ} 42'$  N.; longitude  $79^{\circ} 56'$  W. By the observations of the Coast Survey, if I am not mistaken, Fort Moultrie is situated in latitude  $32^{\circ} 46'$  N.; longitude  $79^{\circ} 46'$  W. The fort is surrounded on three sides by the village of Moultrieville—a resort in the summer.

“To prove that yellow fever can be imported into a place, I should take an island in the middle of the ocean; I would surround it with other islands possessing the same characters of climate and soil, and peopled by the same race. I would have this island healthy for at least fifty years. Then I would have arrive at it a ship scourged with yellow fever; this ship should implore succor, and it should be granted; yet, as a wise precaution, some kind of quarantine should be established. Of all the inhabitants of the island, some few only should be brought into the immediate presence of the sick. Within the period fixed by experience as the stage of incubation of this disease, one or two of these few, and these only, should begin to suffer from the same disease; then from these sufferers the disease should gradually spread as from a centre, until the whole island was infected. While, however, this one island was thus ravaged, the adjoining islands, which the infected vessel had not visited, should remain perfectly free, in order to prove that there was no (so styled) epidemic constitution. Then, if all these conditions were fulfilled, I would confess that yellow fever *may* be contagious, and *can* be imported.” (*Brit. & For. Med. Chir. Rev.*, Oct. 1852, p. 215.)

The same review vouches the truth of the foregoing supposed circumstances at Boa Vista, even to the health “for at least fifty years;” for “no epidemic has ever been recorded until this.” If Boa Vista, situated within the tropics, in latitude  $16^{\circ} 5'$  north, has been without an epidemic fever fifty years previous to the arrival of the “Eclair,” Sullivan's Island, more than  $32^{\circ}$  north of the equator, and more than  $9^{\circ}$  north of the tropic of Cancer, must be still more salubrious; for “no epidemic has ever been recorded;” and there has been so much said about

an essential part of the history of the epidemic which Surgeon Porter describes. The original report cites, in more or less of detail, 111 cases, and gives abstracts of the meteorological observations at Fort Moultrie for the years 1849, 1850, 1851, 1852, and 1853. To publish the whole entire, would occupy more space than can be commanded for that purpose. To decide what cases should be withheld from publication, was embarrassing. The endeavor has been to retain those most intimately connected with the origin and early progress of the epidemic, or which peculiarly serve to illustrate the treatment. The cases are numbered as in the original report.—C.

its salubrity; its health is annually announced with such a flourish of trumpets by the Charleston newspapers and their correspondents; and the Army Medical Statistics have been so often invoked in its favor, that, for all epidemics, in all time, some arrival from Castle Pinckney, or Charleston; some "Bann," or "Eclair," will surely be found to convey the "germ of contagion" to this favored spot, which, left to itself, would have never known disease or death. A brief medical history, therefore, of Sullivan's Island, previous to the epidemic yellow fever of 1852, may be acceptable.

There appears to be three classes of advocates for the salubrity of Sullivan's Island:

1. Those who assert that no disease can originate on the island.
2. Those who assert that no fever can originate on the island.
3. Those who assert that yellow fever cannot originate on the island.

It is proposed to show that several diseases may originate, and have originated, on Sullivan's Island—as cholera infantum, dysentery, intermittent fever, remittent fever, and yellow fever.

Dr. Strobel, of Charleston, a strong advocate of the transmissibility of yellow fever—in other words, a strong contagionist—gives the following account in his Essay:

"Sullivan's Island is a mere sand-bank, free from ponds, marshes, and vegetation, constantly exposed to the refreshing breezes of the sea, and resorted to by strangers and persons of leisure as a delightful retreat from the noise and bustle of the city. Now, according to the reasoning of our adversaries, it is impossible that yellow fever can be generated there from local causes. Yet instances are on record of its having prevailed there epidemically in 1817; and, if we mistake not, a number of cases occurred in 1838-'39. [Dr. Strobel's note: 'We are permitted to cite one case, that of a young lady, who came from the country, and proceeded to Sullivan's Island before the fever prevailed in Charleston. She took the fever and was very ill.'] Be this as it may, we cannot be mistaken as to the occurrences of 1817, for we distinctly recollect that an attempt was then made to attribute the fever to some local cause, such as a gutter, or a small pond. The yellow fever had not prevailed in Charleston from the year 1807 up to this time, a period of ten years. Upon the revival of commerce, however, at the close of the war of 1812, a sudden irruption of yellow fever took place, at a time when the city was filled with strangers. Sullivan's Island was then considered as a safe retreat from the fever, and a very large number of persons went there in hopes to avoid it; many of them were in indigent circumstances, and, of course, crowded together in narrow, confined apartments. Under these circumstances, the fever was *transmitted* from Charleston to that place, and many persons died of it. \* \* \* Many persons, arriving in our harbor, and learning the condition of the city, proceeded from the vessels immediately to the island, where they sickened and died."—Pages 200, 201.

In 1824 yellow fever again prevailed on Sullivan's Island. "On referring back to 1824, it is found that, whilst this disease prevailed with great malignity in the city, not more than twelve cases, none of which proved fatal, appeared on the island, in a strength of seventy."—(*Army Med. Statistics*, p. 201.)

From the foregoing extract, it appears that the yellow fever of 1824 was much milder among the troops at Fort Moultrie than among the residents of the island without the fort. In certain localities the fever was very malignant, and many deaths occurred, particularly in a house now owned by Mr. O. B. Hilliard. Since that fatal epidemic, this lot has been raised, by several hundred cart-loads of sand, and the residence has been much more healthy than previously, but has not entirely outlived the reputation acquired in that sickly summer. Indeed, the whole square, or block, including Mr. Hilliard's lot, from Accommodation street on the east, to Fort street on the west, and from Middle street on the south, to the back beach on the north, was greatly afflicted with malignant fever during the epidemic summer of 1824, and the whole island was more or less sickly.

"In the 3d quarter of 1834, there are five cases of febris icterodes reported, two of which proved fatal. Of these cases, two originated in Charleston, and the other three at Castle Pinckney."—(*Army Med. Stat.*, p. 201.)



We will transcribe the interesting communication of Dr. Robert Lebby, now of Charleston, to Dr. Strobel—interesting in relation to the fevers of Sullivan's Island, and other points, and in connexion with the subject of contagion:

“FORT MOULTRIE, *January 16, 1840.*

“In reply to your letter of the 6th instant, requesting any information in my possession relative to the fever which has prevailed in the city of Charleston and its vicinity for several seasons past, I have to inform you that the first cases of yellow fever came under my notice in August, 1827, at Fort Johnson. Three men belonging to a company of United States artillery, stationed at that post, remained a night in the city during the existence of yellow or stranger's fever. On the ninth day after, they were attacked with the disease, within a few hours of each other. There was no doubt of the nature of the disease, it being a fever of but one paroxysm, and yielded on the sixth day, favorably. These individuals were strangers to the climate, and had never been here before. They were natives of Germany, Ireland, and Massachusetts. They were not removed from their quarters (the hospital at the time being out of repair); and, during the period of their sickness, ten or twelve men slept in the same room with them, who were alike strangers to the climate, yet there were no other cases of disease in the garrison. The next occurrence of the disease was in 1831, at Castle Pinckney. One of the Irish laborers died in the city of supposed yellow fever. This was an intemperate man. Several other cases of fever occurred afterwards among the laborers, who were brought to Fort Johnson; but, according to my humble opinion, they proved to be bilious remittent fever—were treated as such, and recovered.

“In 1832, the disease appeared in the city of Charleston, and, from two or three of the first cases being traced to the Irish laborers at the Castle, it was supposed to have originated there; and, if I recollect aright, I think a deputation of the medical members of the board of health were sent over to ascertain, if possible, the cause or causes of its origin. It was ascribed by those gentlemen to a quantity of shells taken from the adjacent oyster-banks for the purpose of filling up the parade-ground. From this opinion, however, coming, as it did, from so highly respectable a source, and from gentlemen of known scientific attainments, I differed at the time, with due deference to their experience. And in obedience to an order, I examined the premises, and was of opinion that the causes of the fever were the opening of two privies in the north wall, which had been bricked up for a number of years; their contents, in a decomposed state, taken out in the month of August, and exposed to the action of the sun on the bank near by; together with the exposure of the lower story of the quarters to the action of the atmosphere, it being necessary to rip up the floors, which had sunk down to the surface of the ground, and had remained in that state for some years. It will also be recollected that this fort had been used for some time previous as a lazaretto. The exposure of a surface which had been so long protected from the action of the sun's rays,—is it not more than probable that, when thus exposed, the exhalations therefrom would engender disease of some kind? In this instance, likewise, every one of the cases brought to Fort Johnson was bilious remittent fever. Among those attacked were Lieutenant (now Captain) Brewerton, the master carpenter, two masons, and several black laborers. Yellow fever prevailed in Charleston that season, I think, to some extent. The venerable Dr. Philip G. Prisleau attended Captain Brewerton with me as consulting physician, who may, perhaps, recollect the case.

“The next occurrence of fever under my notice, and which was confirmed yellow fever, was in September, 1838—the mate of one of the lighters, an Englishman by birth, about eighteen years of age, who had been in the harbor about seven or eight months. He slept one night in the city, in September; on the fourth day he sickened, and, although he was among children at Sullivan's Island, and others who were liable to contract the disease, no other instance of it occurred in the family. He recovered.

“The next occurrence of the fever was on the 16th June, 1839. Capt. R., of United States



lighter Valiant, lying in the cove of Sullivan's Island, was taken on this date. He reported at the hospital of Fort Johnson. This man had not been in the city, from all the information I could obtain, for twelve days, at least, previous to his attack. From the history he gave of himself, and the symptoms exhibited, I was of opinion that he was laboring under intermittent fever, resembling that form known as country fever. In the evening there was a distinct intermission, the fever going off with copious perspiration. Between this period and the evening of the 21st there were two distinct paroxysms. On the morning of the 22d it assumed the continued form; on the 23d he commenced ejecting black vomit, bleeding from his blisters, mouth, and rectum; and on the 24th he died.

"The next case admitted was on the 20th June, from the lighter Sea Flower, lying at the wharf at Fort Johnson. This vessel had been engaged for some time in transporting materials from this post to Fort Moultrie. The captain had not been to the city for many weeks. His symptoms were exactly like the first at its commencement: the paroxysms distinct, assuming the double tertian form, and going off in profuse perspiration, occasioning great prostration; it yielded to a very energetic treatment, although there was great gastric inflammation, and some hemorrhage from the bowels. He was a very temperate, regular man in his habits, while the former was the reverse.

"The third case was admitted on the 22d June. This individual was sent on board the Valiant as soon as her captain was taken sick, to relieve him. He was a northerner by birth, in high health, and a perfectly temperate man. This case was well marked yellow fever from its commencement; it yielded on the night of the fifth day, and he recovered. This man had been frequently to and from the city, transporting stone to the breakwater. On the next day a third case from the Valiant was brought to the hospital; this was a black man, with bilious congestive fever; and on that evening another black, with the same fever, from the lighter Fame, from Charleston. Immediately after the admission of the third case from the Valiant, I addressed a note to the commanding officer, expressing my suspicion that there were local causes about the Valiant calculated to generate disease, and suggesting to him the propriety of removing her crew (who were northern men) immediately, and to have the vessel ventilated and well cleansed. Captain Harvey, of Charleston, was placed in command of her, who stated to me that he found a large quantity of decomposed cabbages and potatoes, and other vegetable matter, in a putrid state, in her lockers, and a quantity of dirt and filth between her ceiling. Several of the negroes engaged in cleaning her were taken sick with intermittent and congestive fever. She was scuttled, and allowed to remain full of water for some days. After this she was pumped out, and continued perfectly healthy the rest of the season.

"The next case occurred at Fort Moultrie—an Irishman, who had not been in the city from May; this occurred the latter part of August. On the 18th September, the assistant of Captain Bowman was taken with yellow fever. He had been in the city on the 10th and 17th: he recovered. On the 20th, Capt. Bowman was taken with bilious inflammatory fever. He had not been from Sullivan's Island during the season. Several other cases occurred among the families residing back of the fort. While they assumed a continued form of fever, and in many of their symptoms were nearly allied to yellow fever, it was very doubtful whether they could be properly placed under the head of genuine typhus icterodes. Many cases of inflammatory or broken-bone fever (so called) occurred in October among the workmen.

"In reply to the latter part of your letter, 'whether they (the lighters) did not communicate with vessels from Havana or Matanzas lying at the quarantine ground?' I have taken considerable trouble to ascertain this fact, from every source that a correct knowledge of facts could be derived; and I have no hesitation in asserting, that, with one exception, there never was any communication with the quarantine vessels and the government lighters, or with any one in the service of the United States. The exception alluded to was the captain of the steamer Sumpter; on one occasion he sent his boat on board the John C. Calhoun, some days after she had been boarded by Dr. Simons. No ill effects resulted from it, for neither of the negroes that

were in the boat was sick afterwards. The steamboat continued to perform her regular duties between the city and fort throughout the season, and, though her engineer and mate were entire strangers, there were no cases of fever on board.

"I have thus endeavored to place at your disposal a plain statement of facts, as they occurred, under my own observation, almost from the commencement of my professional career. I have most carefully excluded any opinion of my own upon the contagiousness of yellow fever, or that fever which has prevailed in Charleston for the last two seasons; but, in conclusion, pardon me for entertaining the idea, at the same time expressing it, that there were sufficient causes, both local and general, to have produced an epidemic of some kind. It was to be expected from the peculiarity of the season of 1838, as well as the extreme hot sun by day, in the latter part of May and beginning of June, and the cold northerly winds that blew by night, at the commencement of the summer of 1839."—(*Strobel on the Transmissibility of Yellow Fever*, pp. 190–196.)

These are the only records I have been able to find in relation to the epidemics of Sullivan's Island during the present century, or, indeed, since the first settlement; and, from them, two prominent points are established: that yellow and other fevers did originate, from 1817 to 1839, at Charleston, Castle Pinckney, Sullivan's Island, and on board lighters in the service of the United States in the harbor of Charleston; and that none of these fevers were contagious. That malignant fever originated on Sullivan's Island, in some of these years, there is no sort of doubt.

From 1839 to 1849 yellow fever did not appear in Charleston; but in the autumn of the last-named year the disease prevailed, and there were a number of fatal cases.

*Abstract of the quarterly reports of sick at Fort Moultrie, S. C., for the year 1849.*

MONTHS.....	Jan	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Deaths.	Aggregate strength.
MEAN STRENGTH.....	111	103	100	99	101	98	81	58	52	59	59	58	-----	-----	979
DISEASES.															
Febris intermittens quotidiana .....	3		1										4		
Febris intermittens tertiana .....	4	1				1	2						8		
Febris remittens .....									4			1	5		
Diarrhoea .....	6	1		1	4	7	4	1		2	2		28		
Dysentery acuta .....	3	1					2		1	3			10		
All others .....	19	12	12	28	11	16	19	4	5	5	8	3	142		
Total .....	35	15	13	29	15	24	27	5	10	10	10	4	197		

Average mean strength for the year: Officers, 6.83; enlisted men, 74.75: total, 81.58.

This table shows the health of the troops at Fort Moultrie for the year, diseases strictly climatic being given, and "all others." But there was much more disease among women and children than appears on the reports. On the report for the quarter ending September 30th, are the following remarks: "During September there was considerable sickness; much more than appears on the face of the report, as a large number of women and children, belonging to the post, and left behind by troops in the field, were present. Their diseases were principally intermittents and dysentery; the last severe in many instances, but none of the cases were fatal." In the report for the quarter ending December 31st, are the following remarks: "In October, while yellow fever prevailed in Charleston, there was considerable sickness which does not appear on the face of the report, being among females and children—principally bowel affections. November was more healthy than October, and December still more healthy; though



in all the quarter there has been more sickness than appears on the report." It is to be regretted that the diseases of women and children were not registered. The next year was sickly, as will fully appear hereafter.

*Abstract of quarterly reports of sick at Fort Moultrie, S. C., for 1850.*

MONTHS.....	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Deaths.	Aggregate strength.
MEAN STRENGTH.....	59	59	55	52	48	46	44	44	44	44	96	192	-----	-----	783
DISEASES.															
Febris continua .....						1							1		
Febris quotidiana intermittens.....						1					1		2		
Febris tertiana intermittens.....							1	1			1		3		
Febris remittens.....								11	25	2		1	39		
Diarrhœa.....			1		1	1					2	6	11		
Dysentery acuta.....						1			1	1	1		4		
All others.....	8	1	8	4	4	9	9	5	5		7	10	70	2	
Total.....	8	1	9	4	5	13	10	17	31	3	12	17	130	2	

Average mean strength for the year: Officers, 6.41; enlisted men, 58.83; total, 65.24.

Deaths, 2—one in July, from convulsions caused by obscure disease of the brain; one in September, from apoplexy.

Four companies of the 2d artillery arrived from Florida in the quarter ending 31st December, (on November 27,) one of which went to Castle Pinckney; and from this date the garrison of Fort Moultrie consisted of four companies. The foregoing tables include the sick properly belonging to the garrison of Fort Moultrie, the rest being carefully excluded; but, as these general reports and tables give but a faint idea of the fevers in August and September, it will be necessary to notice the epidemic more particularly.

From the meteorological tables it will be perceived that the summer of 1849 was comparatively cool and wet, and that the summer of 1850 was hot and dry; but no one can form an idea of the continued and intense heat during the summer of the latter, unless he had been a resident, or has an opportunity to study the daily meteorological observations of that period. From the 26th day of June to the 8th of September there were only six days in which the daily mean of the thermometer did not range from 80° to 90°; there was only one day in July when the daily mean of the thermometer was not 80°, and above; there were only five days in August in which the daily mean was not 80°, and above; and there were twelve days in September in which the daily mean was 80° and above.

In July the thermometer ranged as follows: Sunrise, from 74° to 86°; 9, a.m., from 80 to 89; 3, p. m., from 81 to 95; 9, p. m., from 77 to 86.

In August: Sunrise, from 73 to 84; 9, a.m., 79 to 90; 3, p.m., 78 to 94; 9, p.m., 77 to 86.

September: Sunrise, from 60 to 80; 9, a.m., 65 to 88; 3, p.m., 76 to 91; 9, p.m., 67 to 85.

*Health of Charleston previous to the epidemic.*—Yellow fever in the autumn of 1849; scarlatina and other eruptive diseases during the following winter and in the spring of 1850.

*Health of Sullivan's Island.*—In the summer of 1849, bowel affections and intermittents. No yellow fever in the fall of 1849, as in Charleston. In the following winter there were catarrhal affections and diarrhœa, especially among children. Pertussis, common. In April, 1850, scarlatina was introduced from Charleston, and a number of severe cases, of the anginose and



malignant varieties, occurred in the months of April, May, and June, several of which proved fatal. The chlorate of potassa and the chlorine mixture, as recommended by Watson, were tried, but without the least benefit. In some of the last cases inunction was tried, as I thought, with good effect. Olive-oil was used. Oily or greasy applications to the surface appear to act by softening and preserving the cuticle; the action of the skin is not checked as when the cuticle dries, cracks, and peels off; and, in consequence, dropsical effusions, the most dangerous of the sequelæ, are not so common, extensive, or fatal. In June and July, bowel affections, including cholera infantum, were common among children. Prickly heat (*lichen tropicus*) was universal, from infancy to threescore and ten; boils were almost universal; and phlegmonous and carbuncular abscesses were extremely common.

The epidemic fever began in Charleston in July, but its appearance was later on Sullivan's Island, and it spread rapidly and universally—scarcely a single person in a family escaping. The fever did not, for some reason or other, attack the garrison of Fort Moultrie, this year, until it had spread to almost every part of the island, and for a time there seemed to be a protecting line drawn around the public grounds; but when the fever did come, it came like an avalanche, and swept all before it. The first case of fever in garrison occurred on the 20th of August, and the epidemic was nearly over by the end of September—there being only two cases in the month of October.

*Symptoms.*—A few of the prominent ones will be given: Cephalalgia was general in the early stage, often severe in the orbital and frontal regions; occasionally the eyes were suffused and a little injected, all going off as the disease progressed or was under treatment; pains in the back and limbs were universal; gastric irritability, frequent; pain or tenderness of the epigastrium, almost universal. The skin was sometimes hot and dry; oftener there was not much heat, but a tendency to clammy sweat, or cold and profuse perspiration. The patients with hot and dry skin were regarded in much the most favorable light, agreeably to my experience in the Florida fevers of 1839, 1840, and 1841, having much less of the congestive character. Tongue of all appearances—clean, yellow, white, moist, or dry. In some of the most serious cases the tongue had red edges, becoming dark-brown and dry in the progress of the disease. Hemorrhage was common; generally uterine in the female, often causing abortion in pregnancy; in the male, epistaxis. As the tendency of the epidemic was to recovery, these varieties of hemorrhage mostly came on early in the disease, were often critical, or were the precursors of convalescence.

*Treatment.*—Regarding the disease as a fever with tendency to congestion, the method of treatment was similar to that adopted in the Florida fevers in 1839, '40, and '41. The following is from my report for September, 1850, to the Surgeon General:

“The cases of fever which came under my own observation, both in garrison and beyond it, very much resembled those at Fort King, Florida, in 1841. This fever exhibited considerable tendency to congestion, like the Florida fevers. One of the worst cases of congestive fever I have ever seen, originated on this island, in the person of a married female, of good habits and character, who had not been from the island for more than six weeks previous to the attack.

“Sulphate of quinine was the main remedy. It was given with calomel as a cathartic early in the disease, generally followed by oil of ricini. In a few cases, when there was vigor of the circulation, without gastric irritation, quinine was given with tart: antim: et potassæ, until the pulse was reduced. A combination of sulph: quin: and infus: capsicum was an invaluable remedy. These two articles were often given at the very commencement, and almost always in the progress of all cases. There was a tendency to congestion, often from the first, almost always in the progress; hence, the value of this combination. In a case (a company laundress) of relapse, attended with rapid and feeble pulse, great thirst, pungent heat of skin, &c., quinine and capsicum were freely used, and, in the course of eighteen hours, the patient was considered out of danger. Unfortunately, in about twenty-four hours from the second attack of

fever, abortion of a three months' foetus (with considerable hemorrhage) occurred, reducing the patient to an extreme condition. The combination of quinine and capsicum was steadily continued, in addition to æther: sulph:, brandy, &c., until the urgent symptoms passed off; and the patient recovered."

The case of congestive fever alluded to terminated fatally, with all the symptoms of apoplexy, stertorous breathing, &c. A few additional remarks, principally in relation to the severe cases, will close the treatment. Venesection was scarcely thought of. Free cupping, often dry, to the cervical spine, lumbar region, and epigastrium, was general. Sinapisms were in universal use; and blisters were often employed in the severe cases, oftenest to the epigastrium, and frequently over the cervical spine. In all cases, from the beginning, quinine was the sheet-anchor, nearly always combined with the infusion of capsicum. In a few grave cases, with brown and dry tongue, &c., calomel in broken doses was combined with quinine, with excellent effect. Ptyalism was avoided, occurring only once, slightly, in a severe case with dry tongue, sordes, &c. So soon as slight tenderness of the teeth and gums came on, improvement was rapid. The various preparations of opium were in general use at night—morph: sulph: most frequently. Wine, brandy, and malt liquors, according to the taste of the patient, were pretty freely used.

*Epidemic of 1850—Medical Statistics of Fort Moultrie.*

	Number present	Number of fever cases.	Deaths.	Number exempt from fever.
Officers and men.....	48	38	-----	10
Women, children, and servants.....	49	43	-----	6
Total.....	97	81	-----	16

We have 38 fever patients among 48 officers and men, or 79.16 per cent. = 791 per 1,000. Women, children, and servants, 49 present, and 43 cases of fever, or 87.75 per cent. = 877 sick per 1,000. In a total of 97 persons, there were 81 sick with fever, or 83.50 per cent. = 835 per 1,000; and the number of persons who escaped fever was only 16, or 16.50 per cent. of the whole = 165 per 1,000. All this in less than two months; the first being taken sick August 20th, the second August 23d, and the last October 14th. Indeed, deducting two cases on the 5th and 14th of October, we find that the whole of this sweeping epidemic took place from the 20th of August to the 30th September, or in the course of forty-two days.

*Case 1.* Mrs. S——, residing in Middle street, near the steamboat-landing or ferry-wharf, was taken with congestive fever, but I did not see her until a day or two had elapsed, or on the 12th of August. Died on the 14th. This is the case alluded to in my report to the Surgeon General. She had not been in town for six weeks, as she told me on my first visit, and never staid in Charleston over night.

*Case 2.* The infant of Mrs. S——, above mentioned, seven months old, was taken with malignant cholera infantum on the 18th of August, and died on the 27th. Had not been in the city of Charleston, or from the island, during the summer. The late Doctor Ramsay saw both of these cases with me, and we had several conversations in relation to their origin: both of us being satisfied that they originated on Sullivan's Island.

*Case 3.* A child of Corporal Dounan, company I, 2d artillery, eight months old, was taken with cholera infantum in the month of June, and on the 10th of July was considered moribund. The condition of the child at this date was as follows: Emaciation extreme; pulse small and very frequent; stomach had become quiet, and the bowels much more so than previously: skin clammy; apparently no use of the limbs: thumbs drawn down into the palms of the hands; slept with one eye partly open, like a very sick child, but the other eye was wide open during



sleep; ulceration of both cornea—in fact, the patient was given up. Regarding the state of the patient as hydrencephaloid, and that the smallest depletion must prove fatal, the general treatment was continued: small and frequently repeated doses of aqua ammonia, sulph: quini:, brandy, wine-whey, &c., and minute doses of tinct: opii, tinct: ferri, were used after small doses of acet: plumbi were withdrawn. The child lingered until cold weather came, and finally recovered. Had not left the island during the summer.

*Case 4.* Elizabeth Dounan, mother of the above, was taken with the prevailing epidemic in September. This case, of relapse and abortion, has been already sufficiently alluded to in my report to the Surgeon General. There was no arthritic disease in this case, neither was there any eruption, except prickly heat. Had not been in Charleston for weeks.

*Case 5.* A child of Private Bronsman, company I, 2d artillery, thirteen months old, was taken with cholera infantum in the month of July, and in August was given up as lost. As cold weather came on, the child gradually recovered, but was troubled with diarrhœa during the whole of the subsequent winter. Did not leave the island during the summer. This child and Corporal Dounan's would have been sent to Aiken, or to Buncombe, or to the White Mountains, had not the means been wanting.

*Cases 6, 7, 8.* In a small house near the ferry-wharf, three persons resided—a man, his wife, and another woman. The wife was taken with the epidemic fever on the 23d of August, the other female on the 24th, and the man on the 25th. All had the fever severely; all complained of intense pains in the frontal and orbital regions, and all had hemorrhage. The two females had profuse uterine hemorrhage, and the man had epistaxis. No boils, or eruptions, except prickly heat. No arthritic disease. All had severe pains in the lumbar region and limbs.

*Case 9.* Judy, a female black servant of my own, about 55 years of age, had the fever severely in the very last part of August. Had intense pains in the frontal region and orbits, severe pains in the lumbar region, and epistaxis. Had this woman been only 25 or 30 years of age, there would probably have been menorrhagia; but the critical time of life having passed, epistaxis occurred. She did not leave the island during the summer, and never left the house (between the fort and hotel) and yard except on Sunday afternoon. Recovered.

*Case 10.* My other servant, a dark-colored boy, 17 or 18 years of age, had the fever still more severely in the early part of September. He had intense pain in the frontal and orbital regions, suffusion of the eyes, and profuse hemorrhage from the nostrils. He was severely sick for several days. Had not been in town for weeks. Recovered.

*Case 11.* Mr. G——, residing in Middle street, about half-way between the fort and ferry-wharf, was taken with this fever on the 4th of September. Had visited Charleston daily, but never staid over night. Had intense pain in the frontal region and orbits, and back and limbs; and the disease speedily assumed the congestive character. At one time he was considered in a very dangerous condition. Recovered.

*Case 12.* David Dounan, corporal of company I, 2d artillery, was admitted into hospital with the prevailing fever on the 6th of September: when first taken, had severe pain in the frontal region, back and limbs, and tenderness of the epigastrium; in the progress of the case, the tongue had red edges, and the surface became black and dry; sordes, heat of skin, pungent to the touch. As the disease advanced, restlessness at night, and muttering delirium; no delirium during the day. Calomel and quinine were regularly given to this patient; sinapisms, cups, and afterwards blisters, to the mastoids, cervix, and epigastrium; camph: and s: morph: at night. So soon as the teeth became slightly tender, improvement was rapid. Recovered. This was a very sick man, and for a few days the result was doubtful. Three or four similar cases occurred among the men in hospital.

*Case 13.* Ann C——, of Charleston, residing temporarily on Sullivan's Island, Irish, about 25 years of age, married, dissipated, was taken with the fever in August: had severe pain of the forehead and eyes, back and limbs; uterine hemorrhage came on, and she finally had a miscarriage. Recovered.



*Case 14.*—Ann Boyle, Irish, wife of a soldier, about 35 or 40 years of age, had the fever in August: had intense pain in the frontal region, back and limbs, and menorrhagia. Recovered.

*Case 15.*—Mary Boyle, daughter of the above, 10 or 11 years of age, had the fever in August: severe pain in the frontal region, and epistaxis. Recovered.

*Cases 16, 17, 18.*—Isabella, colored, was taken with the epidemic fever on the 20th of August: severe pain of the frontal region and orbits, eyes tender to a slight touch, and suffused. She was very ill for three or four days. Her son, about three years of age, had the fever in the first part of September, (taken September 4): eyes suffused; epistaxis. She lost a child with cholera infantum in the last part of July, which child had not been from the island for weeks.

*Cases 19, 20, 21, 22.*—Margaret Masterson, Irish, widow, about 40 years of age, had the fever severely in the last part of August: intense pain in the supra-orbital region, suffusion of the eyes, menorrhagia. Had, during convalescence, an enormous abscess on one arm. Her three children had the fever at the same time; and altogether it was a helpless family. One of these children had epistaxis, and another was troubled with boils, both before and after the fever.

These brief notices of cases, made for the purpose of showing the nature and origin of the fever, are sufficient. Whole families were sick with the epidemic disease at the same time, and it was not uncommon to have difficulty in finding well persons enough to assist the sick! Indeed, so universal was this fever among the women and children attached to the garrison, that they received their nourishment—tea, arrow-root, chicken-broth, beef-tea, &c.—for a time, entirely from the hospital. Happily, the fever was not of long duration, nor was it fatal, but the suffering was great.

What was this fever? Dr. Dickson, and many of the Charleston physicians, think it was the true dengue, as also several of the Augusta, Savannah, and other southern physicians. Then, what is dengue? My limits forbid more than a reference to the descriptions and opinions of Surgeon General Lawson, at Pensacola, in 1828; of Dr. Dickson, about the same period of time; the compilation of Dr. Forry, &c., in my report to Dr. Fenner, (Southern Medical Reports for 1850, pp. 375—379.) From all the authorities, we are warranted in saying that dengue, throwing adventitious symptoms aside, is a febrile arthritic disease, combined with exanthema.

1. *The arthritic affection.*—This was not noticed. During the whole summer, not a single case occurred to me with this arthritic affection. Dr. Lawson says that “the fever usually ran very high, and continued, without a remission, from twenty to thirty-six hours; after which it subsided, leaving the patient in a state of extreme debility, and laboring under an acute rheumatic affection of the muscular system generally.” Dr. Dickson says: “Of all the symptoms of dengue, the affection of the joints was the most tenacious and troublesome, adhering for weeks to some patients, and constituting a sort of permanent lameness, or loss of mobility.” Dr. Dumaresq, of New Orleans, observes: “This was a singular termination of the disease, leaving sufferers from the fever hardly able to move about; and, indeed, the appearance of persons in the street must have been truly pitiable to a healthy stranger; here, one seen dragging his legs after him, supported on crutches—and there, another, with limping gait and various contortions of countenance, bespeaking that his tardy progress was made at the expense of his bodily feeling.” Dr. Dunglison says that “it seems, in all, to have been a singular variety of rheumatic fever.” Not a single instance of the disease termed dengue, as above described, came under my notice during the season.

2. *The eruption.*—It has been already mentioned that cutaneous complaints were universal in the months of June and July, long before the epidemic fever commenced—as lichen, in its different varieties, boils, and phlegmonous and carbuncular abscesses. One person, covered with prickly heat, had more than twenty small boils from one elbow to the wrist, answering the description of the phlegmonoid eruption of the dengueists; but the person in question did not have a single symptom of the epidemic fever, although he had a large and troublesome abscess on one of the nates, in the month of September; but from fever he was entirely free. Cases

occurred in children, long before the epidemic broke out, in whom boils were almost universal, on the chest, neck, and scalp; there being at the same time nearly a perfect sheet of prickly heat over the body. These eruptions, boils, abscesses, &c., were extremely common before the epidemic, and were regarded as the effect of intense summer heat—as estival. The entire absence of arthritic disease, and of an eruption coinciding with the fever, led me to conclude, both during the epidemic and afterwards, that the disease was not dengue.

The epidemic disease was mostly southern bilious remittent fever; sometimes continued fever, with tendency to congestion. But after reflecting upon the prominent symptoms, when first called to patients at the commencement of the fever, and especially after comparing them with the epidemic of 1852, I do not hesitate to say that the disease made a near approach to yellow fever. The symptoms, omitting those common to all southern fevers, were those of yellow fever, as given by me in Fenner's Southern Medical Reports, pp. 380 and 381, viz: "Cephalalgia was general in the early stage, often severe in the frontal and orbital regions; occasionally the eyes were suffused and a little injected—all going off as the disease advanced, or was under treatment. Hemorrhage was common—uterine in the female, often causing abortion in pregnancy; in the male, epistaxis. As the tendency of the epidemic was to recovery, both of these varieties of hemorrhage were often critical or the precursors of convalescence." Dr. Fenner speaks of the *hemorrhagic tendency* in the fevers of New Orleans this year. Everything considered, it is my opinion that only "one turn more of the screw" was wanting to develop well-marked yellow fever.

1851.—This year was comparatively healthy. The number of companies in Charleston harbor was seven—four at Fort Moultrie, two at Fort Sumpter, and one at Castle Pinckney—all under my medical charge. The hospital of Fort Moultrie was the general hospital for the sick in the whole harbor; but I have carefully separated the cases strictly belonging to the garrison of Fort Moultrie from all others, an abstract of which is given below.

*Abstract of the quarterly reports of sick at Fort Moultrie, S. C., for the year 1851.*

MONTHS.....	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Deaths.	Aggregate strength.
MEAN STRENGTH.....	198	196	187	183	177	201	210	198	186	210	223	210	-----	-----	2,379
DISEASES.															
Febris catarrhalis .....			1										1	-----	-----
Febris intermittens quotidiana.....	1			1	1								3	-----	-----
Febris intermittens tertiana.....	1	4	6	3	2			2					18	-----	-----
Febris remittens .....		1	1		5	4			3	1			15	-----	-----
Febris continua .....						1	2						3	-----	-----
Diarrhœa .....	1			2	1	2	11	7	2	5	2		33	-----	-----
Dysentery acuta .....		1	1	2	1	3	6	1	2	7	1		25	-----	-----
Dysentery chronica .....			1										1	-----	-----
All others.....	19	14	18	7	8	18	46	46	24	16	17	17	250	4	-----
Total .....	22	21	27	15	18	28	65	56	31	29	20	17	349	4	-----

Average mean strength for the year: Officers, 12.58, enlisted men, 185.66: total, 198.25.

Deaths 4; one in March, from fracture of the cranium and meningitis; one in May, of enteritis, chronic dysentery supervening; one in November, of phthisis pulmonalis; and one in December, a deserter, who had country fever in his absence, was admitted for general debility, and at last died of chronic dysentery. Number of cases during the year, 349. Mortality per cent., 1.14.



We come now to the epidemic fever of 1852.

*Abstract of the quarterly reports of sick at Fort Moultrie.—Taken sick during the year 1852.*

MONTHS.....	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Deaths.	Average strength.
MEAN STRENGTH.....	203	167	100	92	85	78	74	71	71	113	107	98	-----	-----	1,259
DISEASES.															
Febris continua .....								2					2		
Febris icterodes .....									1	29	3		33	4	
Febris intermittens tertiana .....							1	1					2		
Febris remittens .....									24	3	1		28		
Diarrhoea .....				1		1	2				1		5		
Dysentery acuta .....			1	1						1	2		5		
All others .....	23	11	5	6	7	4	6	7	5	5	12	10	101		
Total .....	23	11	6	8	7	5	9	10	30	38	19	10	176	4	

Average mean strength for the year : Officers, 8.58 ; enlisted men, 96.33 ; total 104 92.

#### CASES OF FEVER DURING THE EPIDEMIC.

*Case 1.* Private Joseph Dunn, company K, 2d artillery, was admitted on the 22d of August, with bilious continued fever. This was not a severe case, and the patient soon recovered. He had not been in town, or from Sullivan's Island, for several months ; and there is no hesitation in saying that his disease originated on the island. Hard drinker.

*Case 2.* Colonel M—— was taken with severe congestive tertian intermittent on the 29th of August, having been unwell three or four days previous. This case originated in fishing excursions to the west end of Long Island, which is near the east end of Sullivan's Island ; the Colonel being exposed to the damp evening air and malaria on his return, during the passage of his boat from the former island, through the creek or passage between the main land and the back beach of Sullivan's Island, to the fort-wharf. Colonel M—— stated to me that he had not been subject to any form of intermittent fever for many years. This was a severe and obstinate case ; during every paroxysm there was congestion of the brain, which was so great in the last one that his situation was considered dangerous. Recovered.

*Case 3.* Private George Hepp, company E, 2d artillery, was taken with bilious continued fever on the 31st of August. This was a mild case. Hepp was an old soldier, and had just re-enlisted (on the 20th of August), previous to which he states that he resided on a farm four or five miles from Charleston, where the fever was doubtless contracted. Attacked with remittent fever on the 17th of September. Sober.

*Case 4.* Private John Roberts, company K, 2d artillery, drunkard, was taken sick with mild remittent on the 6th of September. Origin unknown.

Hitherto the fever was mild, scarcely worthy of attention ; nor would it have been noticed but for what followed. The epidemic really broke out in a decided form on the 7th and 8th days of September. From 7, A. M., of the 7th, to 2, P. M., of the 8th, four inches of rain fell. From 7, P. M., of the 4th, to 2, P. M., of the 8th, no less than 9.40 inches of rain fell, or 1.88 inch per day ; and this quantity added to 8.86 inches in June, 5.43 inches in July, and 4.15 inches in August, makes the enormous quantity of 27.84 inches in three months and eight days. More than an average quantity (4.17 inches) fell in the May previous.

We will first notice the cases in the soldiers' families residing on the parade, which extends from Middle street (this street runs between the fort and parade) to the back beach ; next, the cases which occurred in the fort ; and lastly, cases entirely detached from the fort and parade.



*Case 5.* Dominick Duffy, 1st sergeant of company K, 2d artillery, quarters on the east side of the parade, was taken sick with fever; registered remittent on the evening of the 7th of September. Sober; conduct unexceptionable. Ol: ricini; oz. j. 8th. Removed to hospital early this morning; severe headache: skin hot and dry; pulse full: tongue coated with yellow fur; oil had operated; cup the cervical spine. Sul: quin: grs. x, cal: grs. v; m: at 9, A. M. s: quin: grs. v, at 1 and 6, P. M. It is not necessary to pursue the treatment further. Returned to duty on the 20th September. Sergeant Duffy, his wife, and Margaret Cooney, who lived with them, went to Charleston last on the 24th day of August, in the 2 o'clock, P. M., boat, and returned in the 5 o'clock boat: thus being in town but little more than two hours. Having heard that yellow fever was in town, they passed directly through Market street to King street; and when their purchases were made all three returned through Market street to the steamboat. King and Market streets were the only streets entered. Never remained in Charleston over night. None of them went to town after the 24th of August; Ann Duffy, the wife, was taken with yellow fever on the 16th of October; Margaret Cooney remained in perfect health.

*Case 6.* Mary Stolper, wife of Sergeant Stolper, company E, 2d artillery, quarters on the east side of the parade, was ill on the evening of the 7th of September, and early on the morning of the 8th I saw her. The disease was registered remittent fever, but there was intense pain in the frontal and orbital regions, and of the back and limbs; tenderness of the eyes on slight pressure of the globes, and suffusion. This fever was easily broken up by cal: and ol: ricini, and the free use of quinine; but the intense supra-orbital pain and suffusion of the eyes induced me to think, and to express the opinion, that yellow fever might occur. The case served a good purpose—it put us on our guard. This patient had not been in Charleston since the 17th of August, 21 days at least before the attack, when she visited her brother, who was sick with “some kind of fever,” as she expressed it. Never slept in town.

We now come to the Brassard family, quarters on the west side of the parade. Charles Brassard, one year old, was attacked late on the 5th of September, with encephalitis, and died on the 6th, eighteen hours after the first visit. Had not been in Charleston.

*Case 7.* Eleanor Brassard, 7 years of age, was taken with severe fever, registered remittent, in the livery of yellow fever, on the 7th of September. Had not been from Sullivan's Island in twelve months. Had severe pain in the frontal region and orbits, eyes suffused, tenderness of the globes, and also intense pain in the lumbar region and limbs. Had epistaxis on the 8th. Took calomel and quinine on the first day, with ol: ricini, and the quinine was continued, more or less, until convalescence was established. This case also served to point out that yellow fever was approaching. The patient was scarcely able to sit up, when her mother, Mary Ann Brassard, was taken sick, on the 15th of September, with yellow fever.

*Case 8.* Mary Ann Brassard, mother of the above, was attacked with severe yellow fever on the 15th of September. She had intense pain in the frontal region and orbits, tenderness of the eyeballs on slight pressure, suffusion of the eyes, and the vessels of the conjunctivæ were injected. She had also severe pain in the back and limbs, and pain in the epigastric region. The youngest child (Charles Brassard) was weaned in June, on account of the milk disagreeing, and the catamenia had appeared three times since, with great regularity “to the very day.” Had profuse epistaxis on the night of the 16th. On the morning of the 17th, two weeks after the regular catamenial period, profuse uterine hemorrhage came on, continuing to the 23d, which was much worse at the commencement, on the 17th, 18th, and 19th, than at any other time. Yellow skin on the 18th. This case was treated by calomel, quinine, and ol: ricini, with sinapisms and cups to the mastoids, cervical spine, and epigastrium, on the first day, and afterwards blisters to the cervix and epigastrium. Afterwards, the calomel in smaller doses was continued with the quinine, and morphia at night. Gums touched on the 18th. Was finally put on ammonia and camphor mixture, wine, chicken-tea, beef-tea, &c. Recovered. This patient had not been from Sullivan's Island since the 15th of August, exactly one month before the attack of fever. Never had staid in town over night; and she stated to me, in her sickness, that

she had not seen a person sick with fever during the whole summer, except in her own family—the daughter above mentioned, Eleanor Brassard.

*Case 9.* Private Francis Brassard, company E, 2d artillery, hard drinker, husband and father of the above, was taken with severe fever, registered remittent, of a yellow fever character, on the afternoon of the 24th of September. He had intense supra-orbital pain, suffusion of the eyes, and slightly injected conjunctivæ. Pain of back and limbs severe. Calomel grs. x, and in three hours ol: ricini, oz. j; quinine grs. x at tattoo, and same in the night. This case was trusted almost entirely to quinine. Duty on the 17th October. He was in Charleston last, for only a short time (an hour or two only) on the 6th of September, the day of the infant's death, or 18 days before the attack of fever. Never slept in town. No member of this family saw a case of fever except their own sick.

*Case 10.* Private John Hazeltine, company K, 2d artillery, was hospital attendant during the whole summer, the hospital being on the west side of the parade. Moderate drinker. Was attacked with remittent fever on the 9th of September; duty on the 18th. He had not been in Charleston since the month of June.

*Case 11.* Sergeant William McNair, company K, 2d artillery, quarters on the west side of the parade, was taken on the sick report and admitted into hospital on the morning of the 11th of September, stating to me that he had been unwell since the 9th. There was no doubt of the nature of this case from the commencement. Was a hard drinker, and he stated that he had drank more than usual for a few days on account of the bad weather. On the 12th he was very ill; and in the afternoon of that day, his condition was considered hazardous. Very yellow; stomach very irritable, which was relieved by sinapisms and blisters to the epigastrium, and a mixture of creosote. Quinine continued during the day and night, as well as yesterday. Cal: 10 grs., morph:  $\frac{1}{4}$  gr., at night. As he became convalescent, symptoms of nervous irritation began to show themselves in a decided manner (on the 16th), which ended in mania-a-potu. He finally recovered; duty on the 20th of October. That this was a case of yellow fever, is certain; for the intense pain of the frontal region and orbits, tenderness of the eyeballs, suffusion, and injected conjunctivæ on the first day (11th), added to the yellowness and increased injection of the vessels of the conjunctivæ on the 12th, leave no room for doubt. Indeed, he had every sign of yellow fever except black vomit, and there was so much retching and vomiting on the 12th, that this was momentarily expected. This was the first case of undoubted yellow fever on Sullivan's island, the case of Mary Ann Brassard being the second. The patient was last in Charleston on the first of July, more than two months previous to the attack, and he had not left Sullivan's Island since that date; there is, therefore, no doubt of his fever originating on the island.

*Case 12.* Margaret McNair, wife of the sergeant above named, was taken with yellow fever on the 30th of September. Severe pains of the frontal and orbital regions, eyeballs very sore and tender to the touch, suffusion, vessels of the conjunctivæ injected, severe pain of the back and limbs, stomach quiet, though there is some uneasiness in the epigastric region. Has had three children, and is now six months *eniente*. Sinapisms to the cervix and epigastrium; cups to the mastoids and cervical spine; cal: quin: aa 10 grs.; ol: ricini, oz. j, in two hours; and 10 grs. quin: in 4 hours from the first dose. Morph.  $\frac{1}{4}$  gr. at night, and the quinine was continued in smaller doses. No more calomel was given than the first dose, as fears were entertained that a tendency to miscarriage might be produced by it; but the quinine was given pretty liberally until the morning of the 3d of October, or nearly three full days from the attack. Oct. 3. Last night, at 9 and 3 o'clock, took 10 grs. quinine and  $\frac{1}{4}$  gr. morphine. 7 A. M. Patient free of fever; pulse soft and nearly natural; tongue moist; no pain of the head; eyes of nearly natural appearance; very yellow. Directed mild treatment, an enema, small doses of quinine, iced mucilage, a little beef-tea, &c. But about 9 o'clock A. M., unmistakable labor pains began, slight but frequent convulsions came on, the patient became insensible, the head and forehead became hot, and the skin dry; the *ensemble* rendering an unfavorable termination of the case highly probable.



In this state but little was attempted; iced mucilage, which she was able to swallow, was given; sinapisms were applied behind the ears and over the spine, and afterwards blisters; and cloths wetted in iced water were constantly applied to the forehead and whole head. At 2 p. m., the os uteri was fully dilated and the membranes ruptured, when the presentation was found to be of the arm and shoulder; but it was determined to attempt nothing at this stage, on account of the exhausted condition of the patient, and also because she had had children; the pains were frequent and strong, the pelvis ample, the soft parts dilated and easily dilatable, and the child was not of full size. For these reasons the case was, for the present, committed to nature. The left shoulder presented, the right cephalo-iliac position of M. Chailly, head to the right, back in front. In a short time the body of the child was forced down by the strong pains, so that the hand nearly protruded from the vulva, when it was determined to render manual assistance; and, in the event of this proving unsuccessful, to resort to instruments without delay, by reason of the exhaustion of the patient. In the absence of a pain, the head was carried up to the right of the pelvis, as far as possible, bringing down the lower extremities; then, assisting a strong pain with the fore and middle fingers, the body, as far as the shoulders, and the lower extremities, were delivered; and by the next pain, a very strong one, the head and placenta were both delivered together. Fortunately, there was no hemorrhage. As the os uteri became fully dilated, the convulsions ceased, the patient gradually recovered from the insensibility, and, by the time that delivery was effected (about 4 p. m.), she was quite sensible, but greatly exhausted, the pulse being very feeble. Two or three pretty large doses of brandy and water were given; but this beginning to disagree with the stomach, port wine with water was substituted, and a few drops of ether sulph. were frequently given. 10 p. m. More comfortable than could have been anticipated; pulse has risen; stomach quiet. Continue the wine and water through the night, in such quantity and strength as to suit the patient; iced mucilage; a little chicken-tea;  $\frac{1}{4}$  gr. morph. October 4. Passed a comfortable night; pulse firm; all the blisters drawn and dressed; omit wine; take small doses of quinine; beef-tea. October 5. Reaction; pulse firm and frequent; hot skin; pain in frontal region and eyes returned; irritability of the stomach, which was not excessive. Cath. enema; blister to epigastrium; 10 grs. quinine, at 8 and 12; and 5 grs. quin. at 4 p. m.; iced mucilage; chicken-tea, in small quantities, every two hours. Night. Better; pain of the frontal region and eyes abated, nearly gone, and in its place buzzing in the ears (*quininization*) substituted; pulse soft; stomach quiet; skin soft and cool; and, in every respect, the patient was better. From this time the patient was put on small doses of quinine, mist ammon. and camph.; beef and chicken tea; diet gradually improved. Recovered. This patient had not been from Sullivan's Island for more than two months.

We have now concluded the month of September, and have noticed almost every case of fever to the end of that month. We have come to a natural resting-place, and, at this point, let us look back on the road which has been travelled, as our future course will lead us into a different region. Let it be recollected that the night of September 30th is completed; that our garrison consisted of companies E and K, 2d artillery; that few changes had taken place during the quarter which is now ended; that no communication, or almost none, had taken place between the two posts of Fort Moultrie and Castle Pinckney—certainly no communication whatever between the sick and well of the two posts could take place; that none of our really sick patients had been exposed at Castle Pinckney, or in Charleston; and that the movements of all persons who were severely sick could be traced for days and weeks previous to the attack of fever. We will throw out every doubtful case, and we have remaining twenty-seven cases of fever—twenty-four of continued and remittent, and three of yellow fever—which originated on Sullivan's Island. A strict contagionist may contend that Margaret McNair contracted yellow fever of her husband, though it seems singular that her little daughter, five years of age, did not take the disease, for she was exposed during her mother's illness; but neither did this nor any other case of yellow fever, during the whole epidemic, exhibit the slightest property of contagion.



We will throw this case out, however, and we then have two undoubted cases of yellow fever, and twenty-four cases of other fever—twenty-six cases in all—without the suspicion of importation or contagion. To render the matter still more certain, we will reduce the list to those cases which are absolutely certain: and we have two cases of yellow fever—Sergeant McNair and Mary Ann Brassard: and nineteen cases of other fever—Captain Elzey, Orderly Sergeant Williams, Sergeant Duffy, Hazeltine, Rendiger, Emerson, Pilgrim Doherty, Brassard, Murrican, Connor, Eleanor Brassard, Mary Stolper, Deborah Doherty, Sarah McClure, and four in Captain Elzey's family—twenty-one cases in all, during the month of September, which originated on Sullivan's Island, under such circumstances as to leave no manner of doubt in relation to the origin. Not one of them had been exposed to any cause of fever, except on Sullivan's Island.

It has been said that the garrison of Castle Pinckney introduced the contagion of yellow fever into Fort Moultrie. We will examine the facts. The garrison of Castle Pinckney was not withdrawn to Fort Moultrie until the first day of October, and, up to this date, there was little communication between the two posts; for a man on pass had no inducement whatever to visit the dull and dreary post of Castle Pinckney. In truth, there had been little sickness at Castle Pinckney when that post was abandoned; for Major R.'s death did not take place until the 28th of September, after an illness of three or four days only, of yellow fever contracted in Charleston; and Captain A. was taken sick after the funeral of Major R. (which was on the 29th), and left behind when the garrison withdrew to Fort Moultrie. The cases of these two officers were the only two cases of yellow fever up to the 1st of October; whereas at Fort Moultrie there were two cases of yellow fever, and abundance of southern bilious fever, before Major R. was attacked, and before there was a single case at Castle Pinckney; and before the garrison of that post came over, there had been at Fort Moultrie three undoubted cases of yellow fever, and thirty-nine cases of southern bilious fever—forty-two cases, in all, in the month of September—tenfold more sickness than at Castle Pinckney. Not a single sick person, man, woman, or child, came from Castle Pinckney on the 1st of October, and only one sick person (Captain Allen) was left behind. Indeed, we have no evidence that a single case of yellow fever had originated at Castle Pinckney; for, to that date, it was decidedly more healthy than Fort Moultrie; and the yellow fever at the latter post was no more conveyed from Castle Pinckney than from the black hole of Calcutta.

It has been said that the yellow fever was brought from Charleston. Nothing can be further from the truth. Only a certain class of men apply frequently for a pass to town; the married, sober, and steady men rarely ask for passes; nor do the drunkards get them, or apply for them, as often as would be expected. Further, all classes were aware of the great sickness in town, and night passes were refused. So early as July 24th, the following communication was made to the officer in command.

"The heat of the weather, the filthy condition of the streets of Charleston, and the reports in relation to present disease there, render it advisable, in my opinion, for us all to be on the safe side of the question; and I would, therefore, request the colonel commanding to consider the expediency of refusing permission to all persons composing the garrison of this post to pass a single night in Charleston."

Not one of the Fort Moultrie cases in September had been to Charleston (see cases 8, 11, 12,) for weeks, and not one of them saw a case of yellow fever, except in their own families. In all September there had been four cases of yellow fever on Sullivan's Island, wholly unconnected with the fort: Mr. Kennedy, who died at the Moultrie House on the 23d of September, after an illness of five days; the book-keeper of the Moultrie House, who was at the crisis of the disease on the day of Kennedy's death; Mr. Ferguson, who died at the steamboat landing, near the date of Kennedy's death; and Mrs. C. (case 47.) For the particulars of the patients at the Moultrie House, I am indebted to Captain Payne, the proprietor. These four patients could not

possibly have introduced the yellow fever into the garrison of Fort Moultrie, for the best of all reasons—we had it before; for two of the cases (8, 11) were the first cases on the island, and the third case (No 12) could not possibly have seen any person sick with this disease, except at Fort Moultrie. The conclusion is irresistible, that yellow fever was not introduced from Castle Pinckney, neither from Charleston, but that it originated on Sullivan's Island.

October 1st. The garrison of Castle Pinckney, company M, 2d artillery, was removed to Fort Moultrie on account of the alleged insalubrity of the former post; and from this date our garrison consisted of companies E, K, M, all of the 2d artillery. It is a curious fact in the history of the soldier, that no movement of troops can be made without a "*big drunk*," in spite of the officers; and never was there a custom more honored in "the observance" than by company M; for during the first four or five days after the removal, there was scarcely a sober man in the company; and the disease was exceedingly contagious—as much so as Sir William Pym represents yellow fever to be; for almost every man in companies E and K had an attack, contracted of company M. This was the only contagious disease introduced from Castle Pinckney during the year.

October 2. One case of remittent fever from company E. October 4. Two cases of yellow fever from company M. October 5. One case of remittent fever from company E; one case of yellow fever from company M. October 7. One case of yellow fever from company K. October 8. One case of yellow fever from company K. October 9. One case of yellow fever from company K, and one from company M. October 10. One case of yellow fever from company M. October 11. One case of yellow fever from company E, two from company K, and one from company M. October 12. One case of yellow fever and one of remittent from company M. October 13. One case of yellow fever from company M. October 14. One case of yellow fever from company K, two from company M. October 16. One case of yellow fever from company M. October 17. One case from company E, one from company M—both yellow fever. October 19. One case of yellow fever from company K, two from company M. October 20. One case yellow fever from company M. October 23. One case yellow fever from company M. October 25. One case yellow fever from company K. October 26. One case yellow fever from company K. October 28. One case yellow fever from company K. October 31. One case from ordnance corps—a prisoner under sentence of general court-martial—yellow fever. November 4. Two cases of yellow fever from company M. November 10. One case of yellow fever from company K. November 16. One case in the field and staff, remittent—the end of the epidemic; there having been severe frost on the morning of the 15th.

Some of the most interesting cases after the 15th of October will now be given.

*Case 58.* Charles Platt, 1st sergeant of company M—sober as regards spirituous liquor, but an opium taker—was admitted into the hospital on the morning of the 5th of October, at 8 o'clock, A. M.; had not reported before, though he had been ill. He was in the second stage of yellow fever—very yellow; eyes yellow and injected; skin clammy; pulse slow and feeble, &c. Black vomit came on at 12, M., on the 6th, and he died early on the morning of the 8th. After announcing his death, of yellow fever, to the commanding officer, the communication goes on as follows:

"Sergeant Platt, it is said, had been ill two or three days before reporting to the surgeon of the post, but there is certainly no doubt of his having been hard sick more than 24 hours before reporting. In yellow fever, more than in any other disease, three, four, five, or six hours, at the outset, are of immense consequence; and no man with yellow fever can expect to recover after 24 hours' delay. The undersigned, therefore, respectfully requests all company officers to endeavor, by every means in their power, to impress this important fact on the mind of every person connected with the command. Let every person pertaining to garrison—man, woman, and child—be reported without delay to the surgeon as soon as taken ill."

This communication was published to the command at evening parade with excellent effect.

*Case 59.* Private Frederick Schmidt, company M, was taken sick with yellow fever on the



10th of October. He was a drunkard, and admitted a prisoner from the guard-house at 6, P. M. This case was managed in the usual manner, by sinapisms, cups, calomel, quinine, &c., and the mouth became sore on the 14th; and from this date convalescence seemed to be established, until the 20th; the patient taking little medicine except a bitter infusion, the diet being nourishing, as the appetite was rather strong. Indeed, the man was considered out of all danger. On the morning of the 20th there were strong yellow fever signs; black vomit finally commenced on the 25th; and he lingered, in an offensive condition, and more dead than alive, until the 2d of November, when he died. There was mystery in this relapse, which at first could not be understood: but the facts came out at last. It is the custom among soldiers to "cheat the doctor," if possible; and the patient had managed, by means of his *confères*, to smuggle in some liquor and a free diet; thus "cheating the doctor," and launching himself into eternity.

*Case 60.* Private Thomas Patterson, company K, drunkard, was taken with yellow fever on the 11th of October. 8, A. M., calomel, 10 grs., opium  $\frac{1}{2}$  gr.; 15 grs. quinine at 8, 12, and 4; ol: ricini  $\frac{1}{2}$  oz. at 12. Quinine in smaller doses at night, and on the 12th, 13th, and 14th. Appeared to be better on the 12th; decidedly better on the 13th: and was considered convalescent on the 14th, and decidedly so on the 15th. Took no medicine on the 15th and 16th, except some bitter infusion, and his diet consisted of beef-tea in the day and arrow-root at night. Took no medicine on the 17th and 18th, and the diet was improved.

18th—night. On making an evening visit to the hospital, found the patient had relapsed, or secondary fever had come on; there was intense pain in the frontal and orbital regions; eyes suffused, painful, tender, and the vessels injected, &c. Sinapisms and mustard pediluvium; quinine 10 grs., cal: 3 grs., at 9, 1, and 5 to-morrow morning. 19th. Quinine 5 grs., cal: 1 gr., at 9, 12, 3, 6; ol: ricini oz. j. Night. Quinine 5 grs., cal: 1 gr., at 9, 1, 5, and  $\frac{1}{4}$  gr. morphia at 9. 20th. Symptoms continue much as at first; very yellow. Quin: 10 grs., cal: 1 gr., at 9, 1, 6. Night. Quin: 5 grs., at 9, 1, 5; cal: 3 grs., morphia  $\frac{1}{4}$  gr., at 9. 21st. ol: ricini  $\frac{1}{2}$  oz., quin: 5 grs., at 9, 12, 3, 6. Night. Quinine 10 grs., cal: 2 grs., at 9, 1, 5. 22d. Quinine 10 grs., cal: 1 gr., at 9, 1, 5. Night. Quin: et cal: *āā* 5 grs., at 9; 10 grs. quin: at 1, 5. 23d. Quinine 5 grs., at 9, 12, 3, 6, and 5 grs. cal: at 6. Night. Quinine 5 grs., cal: 2 grs., at 9, 12, 3, 6; wine and water, or ale. 24th. Quinine 5 grs., cal: 2 grs., at 9, 12, 3, 6; brandy or wine, beef-tea. Night. Quinine 3 grs., at 9, 1, 5, and wine or brandy, as he prefers. 25th. Hitherto no effect of the mercurial on the gums could be perceived, but this morning they were tender, and there was fetor of the breath. The quinine as yesterday, wine, chicken-tea. Night. Quinine 5 grs., at 9, 1, 5; 2 grs. cal: at 9, to insure the effect: brandy or wine. 26th. The patient was so ill that it was determined to continue the mercurial to the full extent of ptyalism. Quinine 5 grs., cal: 1 gr., at 9, 12, 3, 6;  $\frac{1}{2}$  gr. opium at 9: brandy or wine, and a little beef-tea. Night. Wine; quin: 5 grs., cal: 1 gr., at 9, 1, 5, and  $\frac{1}{2}$  gr. opium at 9. 27th. Mouth quite sore, and mercurials were suspended from this date. Gargle, wine and brandy, beef-tea, and 3 grs. quinine every third hour. With an occasional variation, this plan was continued until the patient became thoroughly convalescent. Duty on the 27th of November.

*Cases 64, 65.* Private Charles Thappler, company K, sober and well-behaved in every respect, was taken with yellow fever on the 14th of October, and was treated principally with quinine, with a small quantity of calomel at the commencement. He had the usual symptoms at the beginning of the disease, and, in the progress of the case, his face became quite yellow. He went to quarters on the 1st day of November: on the 7th, 8th, and 9th, he told me that he was able to do duty; and he had every appearance of being so, for he looked healthy, complexion ruddy, and natural in appearance, &c.; and on the last day he was marked—*duty to-morrow*. On the morning of the 10th, he was brought to the hospital, and appeared to be very sick, having undoubted yellow fever symptoms—intense pain in the frontal and orbital regions; eyes tender, suffused, and the conjunctival vessels injected: face of a dusky red, &c. Cal:



5 grs.; quin: 10 grs. at 9;  $\frac{1}{2}$  oz. ol: ricini at 11; 10 grs. quin: at 1, 5. Night. Cal: 1 gr.; quin: 10 grs.; opium,  $\frac{1}{3}$  gr. at 9, 1, 5. 11th. (Quite yellow: cal: 1 gr.; quin: 10 grs.; opium  $\frac{1}{3}$  gr. at 9, 1, 5. 12th. Mouth sore. The patient was put on small doses of quin.; brandy; sometimes mist: ammo: et camph:; beef-tea, &c. Duty, December 17th.

It may be thought singular by those who contend that yellow fever attacks a person but once in a life-time, and by those who consider an attack of the disease as a preservative against future attacks, provided the person does not spend a winter at the north, to find that this patient is registered as having had two attacks in about one month. Others may consider the second attack a relapse; but this is not my opinion, for the patient was well. A more singular instance than this occurred at Pascagoula in 1848. One of the hospital matrons, dissipated, but not generally so, (by dissipated, I mean that she would sometimes get drunk,) had severe yellow fever, and, in its progress, every symptom occurred which may be looked for in the disease, (including yellow skin, hemorrhage from the mouth and fauces, and uterine hemorrhage,) except black vomit. She recovered, went on duty, and did her usual work for more than two weeks; went out of camp in all directions, got drunk, and, at the expiration of all this, she was again attacked with yellow fever, had black vomit, and died. I did not think the last case a whit more severe than the first, until black vomit made its appearance.

Case 71. Private Thomas Boyd, company K, a great drunkard, was brought from the guard-house (where he had been confined for his bad conduct, by sentence of a general court-martial, since the 19th day of August) to the hospital, in charge of a sentinel, on the 26th of October, about 10 o'clock, A. M., with severe yellow fever. He had intense pains in the frontal and orbital regions: the eyes were tender, suffused, and the vessels were highly injected; the face was of a dusky brown (he was of dark complexion); and altogether the case was a most unpromising one, insomuch that I remarked to the hospital steward, "Here is another of those beautiful cases, which will have to be carried out;" as Fitzpatrick was already dead, Schmidt moribund, and Johnson in a desperate condition—all drunkards. Mustard bath and sinapisms; cal: et quin: *ad* 10 grs., and repeat at 2, P. M.; quin: 10 grs., cal: 1 gr., at 6. Night. Medicine had operated; quin: 10 grs., cal: 2 grs., opium  $\frac{1}{3}$  gr., at 9, 1, 5. 27th. Cal: 5 grs., quin: 10 grs., at 9, 12, 3. Sinapisms, cups, and a large blister to the epigastrium. Night. Quin: 5 grs., cal: 2 grs., opium  $\frac{1}{3}$  gr., at 6, 9, 12, and 3, 6, to-morrow morning. 28th. Very sick; skin of an intensely dark yellow. 8 o'clock, A. M. Cal: 10 grs., opium  $\frac{1}{2}$  gr.; and quin: 10 grs., cal: 2 grs., opium  $\frac{1}{3}$  gr., at 10, 2, 4. The medicine at 8 and 10 o'clock was doubtless retained; but the other two doses were probably thrown off, for the patient had vomited several times in the afternoon. Before 4 o'clock, P. M., while I was standing by him, he threw up a quantity of fluid, which appeared to be, in every respect, commencing black vomit; and the result of the case was considered as settled. He threw up two or three times after this: the contents of the stomach each time being of a darker hue, and more resembling real black vomit. I had no reason in the world to doubt that the real *vomito prieto* had begun. He was directed to have light drinks, and nothing more, and towards sunset the stomach became quiet. 9, P. M. Has not vomited since sundown. Although the case was regarded as necessarily fatal, it was determined to try one more dose of medicine, and 10 grs. of cal: and  $\frac{1}{2}$  gr. opium were administered. Directions were given for him to take nothing whatever for three hours after, and then to take a little wine and water, brandy and water, or such other drink as he might prefer; and I remarked to the steward at the time: "If he does keep the medicine down, it will be of no more use than so much saw-dust." 29th. On going to the hospital this morning, my first inquiry was about Boyd. The steward said he was better, and I replied that I did not believe it. The steward said that he must certainly be better, for his stomach had been quiet all night, and he had a sore mouth. I said "I don't believe it, but let's go and see;" and we found him with a sore mouth—no uncertain one, but a severe pyalism had begun; face swollen; tongue enlarged; teeth and gums very sore, and a decidedly mercurial fetor of the breath. From this date small doses of quinine, brandy, enemata, gargles, chicken-broth, beef-tea, &c., were used;

but it was several days before we could be persuaded that the patient would be saved, as I had never seen one recover with even commencing black vomit. Duty November 27th.

*Case 75.* Miss A. F——, in the sixteenth year of her age, was taken with yellow fever in Charleston on the 18th day of October, and came to Sullivan's Island on the 19th; but I was not called to see her until past 3 o'clock P. M., after she had been sick about thirty hours. She had been in Charleston about five weeks, from Canada East; her friends thinking it best for her to come south on account of a troublesome cough. Catamenia had never appeared. Having been ill so long, the case presented a most unpromising appearance; and so the friends were informed. The patient took calomel, quinia, and ol: ricini on the first day, and afterwards some calomel with the quinia, and the latter was given as fast as was considered judicious; but the case progressed in the most malignant manner to the 21st, when there was great irritability of the stomach; and it is uncertain how much medicine was retained afterwards. Sinapisms, cups, and a large blister to the epigastrium had been used. 22d. Every appearance of the first stage of black vomit, which continued to increase, until I had no hesitation in pronouncing that the fatal precursor had taken place. To take such drinks during the night as are most agreeable, iced or without, and a little brandy in some shape, if possible. 23d—early. It was reported to me that the patient had thrown up several times during the night, and that about three o'clock the vomit appeared in the most decided manner. Since that time the stomach had remained quiet. I could easily credit these reports, both from what I had seen the day and night before, and from the present appearance of the patient, for she appeared to be *in extremis*; pulse frequent and feeble; skin with the peculiar yellow fever sensation to the touch, and clammy; extremities cold; and the eyes, face, and neck intensely yellow. External applications; ices, and iced mucilages; brandy in small quantities in some shape; and mist: ammon: carb: 1 drm. every two hours. In truth, she was considered moribund. Hemorrhage from the nose and mouth came on in the early part of the day, continuing at intervals during the 24th and 25th; after the 25th there was but little hemorrhage. On the 24th, the stomach remaining quiet, and the mist: ammon: appearing to agree better with that organ than anything else, the patient was directed to take a drachm of it every hour, day and night, unless asleep; and as there was troublesome cough and restlessness,  $\frac{1}{4}$  gr. morphia was given every night from this date. Brandy, in some form, was recommended, if she could be prevailed on to take it; and a little chicken-tea was ventured upon. Mist: camph: was afterwards combined with the ammonia mixture. The young lady finally recovered, most unexpectedly to myself; and the severity of the fever may be inferred from the fact that she lost her hair subsequently.

This case and Boyd (case 71) are the only ones I have ever known to recover after black vomit had come on, ever so slightly, in all my experience. The Charleston physicians report a number of recoveries after the occurrence of this usually fatal symptom: more, I believe, than in former epidemics. We have all read of these recoveries, and no one had reason to doubt the fact of their sometimes occurring, but I never expected to see an instance. These two patients were very different; Boyd was a very great drunkard, and the original organization was worn out, and could not be trusted; this young girl had led an innocent life, and, though there was tendency to pulmonary disease, much might be trusted to nature. In both of these cases, however, there was only incipient black vomit, the inner coat of the stomach remaining intact; for we can scarcely conceive of recovery taking place after confirmed black vomit, when the mucous coat is in a state of disorganization.

*Treatment of Yellow Fever.*—The general plan may be seen from the cases: adjuvants being almost wholly omitted from the reported treatment. Calomel and quinia were given in all cases from the beginning, and the former was never omitted from each dose of the latter in the last part of October, when the disease assumed a more malignant character than before; and it may be remarked in this place, that if a great mistake was made in treatment during the whole epidemic, it was in the cases of Fitzpatrick and Johnson (cases 62 and 67), in which calomel ought to have been pushed with every dose of quinine to downright pyalism. It is my opinion



that each of these men might possibly have been saved—though notoriously great drunkards, and bad subjects—by this course of treatment, for no other method could have done it; but, perhaps, I have more reason to rejoice that the mortality was no greater. Fitzpatrick was strongly suspected, also, of having “played old soldier.” Compare these two cases with some others, particularly cases 68 and 71. Bilious fever was treated on the same principles; the lighter the case, the more care was taken to avoid ptyalism.

It affords me great pleasure to bear testimony in favor of this plan of treatment during this epidemic, which is the same as that pursued by myself at Vera Cruz in the summer of 1847; and it is the more cheerfully done, because it is not at present the fashionable treatment, like oil and lemon-juice, snake-root and salts, verberna, &c., &c. From the thousand infallible specifics advertised in the medical journals and newspapers for the cure of yellow fever, it may be inferred that every plan of treatment is somewhat uncertain, and that we have to contend with a malignant disease. The more *certain cures* we see advertised for any disease, the more uncertain the treatment; and we see, notwithstanding infallible treatment, that yellow fever patients do die, as at New Orleans, Havana, Bermuda, &c. It may be said that my patients escaped in spite of the doctor; and this could be said if I had lost 15 or 20 of them in 48 cases of severe and malignant yellow fever, instead of 4 in 48; and, in reality, the physician ought not to be held responsible for more than 2 cases out of the 4 fatal ones. (See cases 58 and 59.) There was, however, a mortality of 4 in more than 100 cases of fever at Fort Moultrie. If mercurials are so injurious in yellow fever, as is contended by many, whether by dissolving the blood, by creating great nervous irritation, by exciting inflammation of the mucous coat of the stomach and duodenum, or for any other reason, most of my patients ought to have died. But did they die? We will see when we come to the statistics of the epidemic.

Venesection was not practised in a single instance; cups were freely employed, but leeches were not used in any case, cups answering every purpose. Anodynes were in universal use, particularly at night. Ice was freely used in a few special cases, but it was not generally required. Sinapisms and epispastics were freely applied. Brandy, in some shape agreeable to the patient, was universally used—more so, perhaps, than in any epidemic I have ever witnessed, and pretty early in the disease, with the best effect, in the cases of temperate females as well as with old toppers. Mist: ammon: carb: was employed in the advanced stages of some of the most malignant cases, with excellent effect. Ale and wine were sometimes given, when the brandy did not agree with the stomach. So soon as the first stage of the disease had somewhat passed, chicken and beef tea were given in small quantities. It is not necessary to go more into detail.

Symptoms have not been detailed. It is easy to perceive, from almost every case, what are considered diagnostic symptoms, and the rest have been almost wholly omitted. Pain of the back and limbs has not been much noticed, for it is by no means pathognomonic, occurring in every southern fever. It is mentioned in this place for the purpose of alluding to the disposition, generally prevalent at the commencement of the yellow fever, to call all fevers dengue, after its predecessor of 1850, when these pains were so common; but they were just as common and severe in this fever. They are common in all southern fevers. The pulse was slow, frequent, full, weak, &c., in all stages of the different cases. The tongue is no criterion. It was nearly natural in appearance, flabby, white, yellow and loaded, brown and moist, brown and dry, black, had red edges, &c., in different cases. The organ presented almost every variety of appearance.

Little will be said concerning the nature of yellow fever. When the disease first occurred to me, it was regarded as *sui generis*—as different from all other southern fevers; but it must be confessed that this opinion has been considerably modified; and, at the present time, it is believed that intermittent, remittent, continued, congestive, and yellow fevers are nearly related, if not modifications of the same fever—all being southern bilious fevers; the nervous system in some, and the blood in others, being pre-eminently affected. Whether the difference in these



varieties of southern fever, in different seasons and in the same season, depends on a simple difference of intensity in the predisposing and exciting causes with the same *materies morbi*; whether different causes exist at the same time, developing the different forms of fever; or, whether there is a blending and conversion of types, as is maintained by Dr. Dickson—all remains to be determined. It is easy to diagnosticate a mild and open remittent from a malignant yellow fever; but the different rounds between the extremities of the ladder are so numerous as to render the central one, the dividing line, difficult to distinguish. This was particularly so in the fevers of 1852; and some cases were registered as remittent fever in the month of September, which might have been, with equal propriety, named and reported as yellow fever. As the fevers became more malignant, in the month of October, there was no sort of difficulty in determining their true character.

## STATISTICS OF THE EPIDEMIC.

I. Table showing the classes of persons attached to the garrison of Fort Moultrie, with their febrile diseases and mortality.

DESIGNATION.	Strength.	No. cases of yellow fever.	No. cases of other fevers.	Total number of all fevers.	NO. SICK, PER 1,000, WITH			DEATHS FROM		MORTALITY PER CENT. FROM—		Deaths per 1,000.
					Yellow fever.	Other fevers.	All fevers.	Yellow fever.	All other fevers.	Yellow fever.	All fevers.	
Officers .....	9	4	4	4	444	444	444					
Enlisted men .....	112	33	27	60	295	241	535	4		12.12	6.66	35
White male adults, not military ..	9	3	3	3	333	333	333					
White adult females .....	29	8	15	23	276	517	793					
White children .....	25	11	11	11	440	440	440					
Colored male adults .....	2											
Colored adult females .....	7	2	2	2	285	285	285					
Colored children .....	7	2	2	2	285	285	285					
Total .....	200	41	64	105	205	320	525	4		9.75	3.80	20

II. Table showing the exposure, fevers, &c., of different classes of persons during the epidemic.

Designation.	Strength.	Cases of yellow fever.	Other fevers.	Total number cases of fever.	Drill duty.	Guard duty.	Fatigue duty or previous exposure.	Provision for respiration.
Officers .....	9	4	4	4	Light	Light	Light	Very good.
Enlisted men .....	112	33	27	60	Severe	Severe	Severe	Good.
Officers' ladies .....	7	1	4	5		None	None	Very good.
Soldiers' wives .....	18	7	9	16		Severe	Severe	Good.
White female servants ..	4	2	2	2		Light	Light	Good.
White males, not soldiers	9	3	3	3		Moderate or light	Moderate or light	Good.
White children .....	25	11	11	11		None	None	Good.
Colored males .....	2					Light	Light	Moderately good.
Colored females .....	7	2	2	2		Moderate	Moderate	Moderately good.
Colored children .....	7	2	2	2		None	None	Moderately good.
Total .....	200	41	64	105				

III. Table showing the habit of intemperance in different classes of persons belonging to the garrison, with their febrile diseases, &amp;c., &amp;c.

Designation.	Strength.	Sober.	Drinkers.	Hard drinkers.	Drunkards.	SOBER PERSONS. DRINKERS. HARD DRINKERS. DRUNKARDS. DEATHS.										Deaths per 1,000.
						No. cases of yellow fever.	Other fevers.	Yellow fever.	Other fevers.	Yellow fever.	Other fevers.	Yellow fever.	Other fevers.	Yellow fever.	Drunkards.	
Enlisted men of company E.---	21	12	2	3	4	1	4	---	2	---	1	1	4	---	---	---
"    "    "    K.---	45	20	6	2	17	5	6	---	2	2	1	5	5	---	---	---
"    "    "    M.---	43	18	3	8	14	7	---	---	---	2	---	9	1	4	4	93
"    "    of other corps.---	3	1	---	1	1	1	---	---	---	---	1	---	---	---	---	---
Soldiers' wives -----	18	18	---	---	---	7	9	---	---	---	---	---	---	---	---	---
White female servants -----	4	4	---	---	---	---	2	---	---	---	---	---	---	---	---	---
White males, not soldiers.-----	9	5	1	2	1	---	2	---	---	---	---	---	1	---	---	---
White children.-----	25	25	---	---	---	---	11	---	---	---	---	---	---	---	---	---
Colored males.-----	2	---	---	---	2	---	---	---	---	---	---	---	---	---	---	---
Colored females -----	7	7	---	---	---	---	2	---	---	---	---	---	---	---	---	---
Colored children.-----	7	7	---	---	---	---	2	---	---	---	---	---	---	---	---	---
Total -----	184	117	12	16	39	21	38	---	4	4	3	15	11	4	4	22

IV. Table of comparison between companies K and M, from October 1st to the end of the epidemic.

Enlisted men.	Sober men.	Drinkers and drunkards.	SOBER MEN. DRINKERS AND DRUNKARDS.				Cases of yellow fever per 1,000.	Cases of other fever per 1,000.	Deaths.	Deaths per 1,000.	Remarks.
			Total.	Yellow fever.	Other fevers.	Yellow fever.	Other fevers.				
Company K.-----	20	25	45	5	---	6	1	244	22	---	In every table, and in all cases, it is to be recollected that company M was not present in September.
Company M.-----	18	25	43	7	---	11	1	419	23	4	

V. Table of different classes of persons, not military, pertaining to the garrison, with their febrile diseases.

Designation.	No. of persons.	No. cases of yellow fever.	No. sick per 1000 with yel. fever.	No. cases of remit. fever.	No. sick per 1000 with remit. fever.	No. cases in all Total fevers.	No. sick per 1000 with all fevers.	Deaths.
Officers' ladies -----	7	1	143	4	571	5	714	-----
Soldiers' wives -----	18	7	389	9	500	16	889	-----
White female servants -----	4	---	---	2	500	2	500	-----
White males -----	9	---	---	3	333	3	333	-----
White children -----	25	---	---	11	440	11	440	-----
Colored adult males -----	2	---	---	---	---	---	---	-----
Colored adult females -----	7	---	---	2	286	2	286	-----
Colored children -----	7	---	---	2	286	2	286	-----
Total -----	79	8	101	33	418	41	519	-----

VI. *Table of mortality in yellow fever, in all the cases treated.*

Designation.	No. of cases.	Deaths.	Mortality per cent.
Enlisted men .....	33	4	12.12
Women of garrison .....	8	.....	.....
Not of garrison citizens .....	7	.....	.....
Total.....	48	4	8.33

The first table requires no explanation. The second, third, and fifth tables give the different classes of persons attached to garrison more distinctly than the first, the previous exposure, provision for respiration, and their character for sobriety, with their febrile diseases and mortality. Under the head of "officers' ladies," are included visitors who remained through the epidemic in precisely the same condition as the class in which they are included. Among soldiers' wives are included several women who assisted as laundresses, who married soldiers then or shortly after, and whose situation, in every respect, duty, fatigue, sobriety, &c., was the same as the class into which they are incorporated. This class of persons was temperate. They were exposed to great fatigue during the heavy rains, and the cases of fever were no less than 889 per 1,000; but there was not a single death. The mortality among enlisted men was 35 per 1,000; and in company M, the only company which lost men, the mortality was 93 per 1,000. The provision for respiration was good for both classes; the fatigue and exposure were great in both classes; the drunkenness was great among the men, and there was none of it among the women; and, although the sickness per 1,000 among the enlisted men was 535, and among the camp women 889, the mortality was nothing in one class, and in the other 35 per 1,000, or 6.66 per cent. of all fevers. The fevers of this year, both remittent and yellow, were universally more easy to manage among females than in men. The third table shows the fevers among drunkards, with whom is classed one habitual opium-taker. From this table it appears that company E had rather more cases of all sorts of fever than company K, or 619 per 1,000, while K had 578 per 1,000; but the number of yellow fever cases was much less in E, amounting to only 95 per 1,000, while the number sick with yellow fever in K was 267 per 1,000, and in company M the yellow fever cases were 419 per 1,000. The number of soldiers' wives sick per 1,000 with yellow fever was 389; other fevers, 500; all fevers, 889; as seen in the fifth table, but there was not a single death. To what can this difference be ascribed? To what is the exemption of company E from yellow fever, as compared with company K, to be attributed, unless to the comparative freedom from hard drinkers and old drunkards? The two companies had been side by side during the whole year, and their barrack-rooms, duties, and exposures had been alike in every respect. The following table exhibits the prevalence of fever among sober men and drunkards in the respective companies.

Company.	Strength.	SOBER MEN.								HARD DRINKERS AND DRUNKARDS.							
		Number.	Yellow fever.	Other fevers.	All fevers.	SICK PER 1,000 WITH—			Deaths.	Number.	Yellow fever.	Other fevers.	All fevers.	SICK PER 1,000 WITH—			Deaths.
						Yellow fever.	Other fevers.	All fevers.						Yellow fever.	Other fevers.	All fevers.	
E -----	21	12	1	4	5	83	333	416	----	7	1	5	6	143	714	857	----
K -----	45	20	5	6	11	250	300	550	----	19	7	6	13	368	316	684	----
M -----	43	18	7	-----	7	388	-----	388	----	22	11	1	12	500	45	545	4



Company M was not present in September, and there was little fever, other than yellow, in the month of October. The September cases are included in companies E and K, and are almost entirely remittent.

There were three men of other corps present during the whole epidemic, in whom yellow fever is apparently in an inverse ratio to the above statement; but this is not in reality the fact, for the sober man who had yellow fever was undergoing punishment (hard labor, confinement, &c.), by sentence of general court-martial, for mutinous conduct; the hard drinker, who had mild remittent fever, was on light duty, and was but little exposed; and the one who escaped all fever—a thief, a liar, and a drunkard, also undergoing punishment for desertion by sentence of general court-martial—was an exception to all rules, being completely hardened, both morally and physically.

We have high authority for asserting that intemperance is a strong predisposing cause of fever in hot climates. Dr. Carpenter says: "Its efficacy has been generally attributed to the general disorder of the nutrient process, and to the weakening of the vital powers, which it tends to induce; but, to us, it appears that it possesses a more direct and special action. One of the best established among the consequences of the introduction of alcohol into the blood, is its rapid oxidation, whereby it is itself eliminated from the circulating current; but, in thus greedily appropriating to itself the oxygen which the respiratory process supplies, it *prevents* the oxidation of other substances, of which it is one of the special objects of that process to get rid; thus tending to induce the same condition of the blood as that which is consequent upon obstructed respiration. And the peculiar potency of this cause in hot climates, where the oxidating process, as measured by the production of carbonic acid, does not take place at above half the rate at which it is carried on in a colder atmosphere, is a strong confirmation of this view."

The sixth table gives the number and mortality of the yellow fever cases; and, at the risk of repetition, is intended to show the result of the practice pursued. A comparison of the cases with this table shows that the main remedy, one in universal use—the combination of calomel and quinine—was not so inefficacious, nor so prejudicial, as has been represented by many physicians. If the combination had been inefficacious, there must have been a large mortality; but it is scarcely probable that two such powerful articles of the materia medica, which show their effects on the system so obviously, should prove inert; and their influence in this epidemic, either for good or evil, is undoubted. If prejudicial in their action, the mortality must have been frightful; for both articles were administered so freely, that scarcely a chance was left for recovery. But there was no such mortality, and the treatment was as successful as any mode of practice could be expected to prove in any circumstances. Much has been said against this mode of treating the disease: but what plan of treatment has ever proved infallible? A clerical gentleman very kindly remarked to me one day, that he did not know of a more disgusting sight than to go into the wards of a hospital filled with sick, undergoing pytalism. I replied that it was disagreeable; but, to me, it was not half so disagreeable a sight as to enter the wards of a hospital filled with patients having black vomit. The occurrence of pytalism in this yellow fever was never an unpleasant sight to me; on the contrary, it was always hailed as the harbinger of recovery. If a simple mode of treating yellow fever can be devised, by which it may always be cured, *cito, tuto, jucunde*, no one will more cheerfully follow it than myself, to the exclusion of calomel, quinine, cupping, blistering, and all other unpleasant remedies.

Our limits will permit of but a single remark on the *modus operandi* of quinine. It is regarded by a very great majority of the profession as a sedative; but, since the free use of it in the severe and malignant fevers of Florida, in 1839, '40, and '41, I have regarded it as having a peculiar stimulant action on the nervous system; nor have I since seen reason to change the opinion. The salts of quinine seem to have a peculiar affinity, if we may so speak, for nervous matter; and hence their beneficial action in many diseases. Dr. Stevens believed that the sulphate has an effect on the blood in malignant fevers, though not to the extent of some of the other alkaline salts.

It may be said that this epidemic was of a mild character. It was not so malignant as that at St. Augustine, Florida, in 1841; nor was it so severe as the yellow fever at Pascagoula, Mississippi, in 1848, though more prevalent: but it appeared to be as grave a fever as that of Vera Cruz in 1847, though the mortality, from circumstances, was immensely greater in that town than on Sullivan's Island and at Fort Moultrie. A glance at the cases will show that the epidemic was not of a mild character. On a certain night visit in October, ten patients were considered in a very hazardous situation: but fortunately only two of them were lost, the others recovering under the free use of calomel and quinine: which ought not to have been the case, if the remedies were pernicious. The following table shows the number of all cases during the epidemic months, with the exception of three fever cases in August:

Months.	Designation.	Strength.	Remittent fever.	Yellow fever.	Cholera infantum.	Cholera morbus.	Dysentery acuta.	All other diseases.	Total number of cases.	Died.	Cause of death.
Septem'r	Officers and enlisted men.....	71	24	1	-----	1	-----	3	29	-----	-----
"	Women, children, servants, &c..	61	15	2	-----	2	" 2	4	25	1	Encephalitis.
October	Officers and enlisted men.....	121	3	29	-----	1	1	4	38	3	Yellow fever.
"	Women, children, servants, &c..	79	12	5	2	-----	3	2	24	-----	-----
Novem'r	Officers and enlisted men.....	107	1	3	-----	-----	2	13	19	1	Yellow fever.
"	Women, children, servants, &c..	74	6	1	1	-----	2	2	12	-----	-----
Total number of sick.....		-----	61	41	3	4	10	28	147	5	-----

Every case of cholera infantum, cholera morbus, and dysentery, in the preceding table, occurred in persons who had not been from the island for weeks, and some of them had never been from the island in their lives. Every case originated on Sullivan's Island. Of the remittent fever, almost every case originated here; for, after the public notice of July 24, and the subsequent post regulation, not a man was permitted to stay in Charleston over night, and few wished to go there; nor did the women and children, who had these diseases, go to town at all. It has been already shown that the yellow fever originated on Sullivan's Island. About the origin of the disease, there can be no question.

The foregoing tables do not perfectly agree with the quarterly reports of sick in a few particulars, the mean strength not being the same as the full number of persons.

*Etiology.*—The generation of yellow fever appears not to depend on the presence of one particular thing or cause, but on the presence or combination of several; and the following seem to have been the principal ones in 1852, as in previous years, viz:

1. *Intemperance, or the excessive use of alcoholic liquors.*—We have sufficiently alluded to the pernicious effects of the free use of spirituous liquors on the system in hot climates. On Sullivan's Island, the chief source of revenue is from the sale of liquor licenses; and there were not less than thirteen licensed grog-shops in 1852, in a population of perhaps 2,000 in summer, and as many hundreds in winter; besides illicit venders, all of whom dispensed the vilest compounds to their unfortunate customers. The effect of such villanous liquor on the system is obvious.

2. *Fatigue and exposure.*—Dr. Carpenter says: "The fatigue resulting from excessive muscular exertion, is commonly accounted one of the predisposing causes of zymotic disease; and this, too, is usually supposed to operate merely in occasioning a general depression of the vital powers. All muscular exertion, it is now universally admitted, involves, as its condition, a



disintegration of muscular tissue, the components of which normally undergo oxidation, so as to be partly eliminated by the respiratory process under the form of carbonic acid and water, and partly by the kidneys under that of urea, &c. Now, if the disintegration of muscle by exercise take place faster than the matter thus set free to decompose can be oxidated and eliminated, it must remain in the blood for a time in that very state of readiness to change, which renders it peculiarly fermentable; and thus its presence in the circulating current will give to the blood the same susceptibility to the action of zymotic poisons, which it will derive from any of the causes."

On Sullivan's Island the condition, habits, fatigue, exposure, &c., of the same class of people, are similar. During the summer of 1852, the garrison of Fort Moultrie was small, and for a time the men had to go on guard every alternate day, the other day being devoted to severe fatigue duty, as getting wood and water, draining the fort and parade, which had been deluged by the heavy rains, &c.; so that their fatigue and exposure were very great. The company women (laundresses) also suffered from fatigue and exposure. These two classes of persons, the enlisted men and company women, chiefly suffered from yellow fever.

3. *Imperfect ventilation.*—On this cause of disease, Dr. Carpenter is so interesting as to merit a long notice: "An accumulation of disintegrating matter in the system may be due, not merely to its excessive production, but to any obstacle which interferes with its due elimination; and this will especially be the case, when the respiratory process is imperfectly performed. All physiological and pathological evidence tends to indicate the paramount importance of this process; not merely as regards the direct elimination, through the lungs, of a large amount of matter which is undergoing change, but also as furnishing the conditions by which the matters, properly to be excreted by the kidneys, are brought into the normal condition for being thus eliminated. For any prolonged deficiency of respiration necessarily lowers the general oxidating process throughout the body; and thus it happens that an undue amount of carbonaceous matter is thrown upon the kidneys for excretion, and that the highly-azotized compounds are not so completely brought, as they should be, into the condition of urea. Now, that over-crowding, and, consequently, deficient æration of the blood, is one of the most frequent causes of the severity of epidemics, is a fact so universally recognized by all who have attended to the subject, that we need scarcely do more than advert to it."

On Sullivan's Island this cause of disease is not so powerful as in Charleston. The dwellings are farther apart on the island than in the city, and there is a better circulation of air; but still there is imperfect ventilation in the crowded old houses and kitchens, whose floors are on the ground, and whose timbers are decayed. These decaying houses are the most liable to be crowded; and one can be pointed out, which, in 1852, contained three Irish families, a free negro or two, and in the house and yard there were cats, dogs, pigs, cows, chickens, &c. The whole house was not comfortable or decent for one small family. In the fort, the ventilation is, in general, good—best in the officers' quarters, next in the men's barrack-rooms, and worst in the servants' rooms, which are on the ground-floor. The barrack-rooms are on the same floor with the officers' quarters, in the second story, and are much more airy, though more crowded, than the servants' rooms. Every man had a bunk for himself. The companies being small, the rooms were not so much crowded as might be supposed; but, when compared with the officers', there was imperfect ventilation. The men, for this reason, have a practice of sleeping on the piazza in warm climates—a practice which is unhealthy, and, in the fever season, dangerous.

4. *High solar heat.*—This acts in two ways: on the human system, and by rapidly promoting animal and vegetable decomposition. It is always necessary for the production of yellow fever, and always prevails in the harbor of Charleston. But it is well known that high heat alone, though indispensable, does not produce yellow fever. It is a powerful predisponent, and develops other active agents.

The summer temperature of Sullivan's Island is high, and when the sea-breeze dies away, as



is often the case at ebb-tide, or the wind is west, the heat is oppressive. There is not a hotter street in the United States than Middle street. The surface of the island is composed of sand; but little grass grows to absorb or soften the sun's rays; there are few trees, and none for shade; the houses are retired from the street, so as to afford no protection from the sun; and the direct and reflected heat is often intolerable. Persons whose pursuits allow them to remain in doors during the day, are tolerably well off; but the active man of business will find that Charleston is more comfortable than Sullivan's Island from sunrise till 11 o'clock, A. M., and from 3, P. M., till sunset: the shade of the houses affording great protection from the sun. The only advantage of an island residence is in the nights, which are not so uncomfortable as in the city.

5. With high altitude of the thermometer in the low country of the south, humidity and a high dew-point are always associated. This is the case in Charleston harbor. The Meteorological Register of Fort Moultrie, for three years, shows this.

*Mean of the dew-point.*

Months.	1849.	1852.	1853.
May.....	70.19	70.51	66.50
June.....	75.36	72.94	71.40
July.....	76.27	78.70	77.33
August.....	77.69	75.77	75.32
September.....	71.70	71.74	71.85

Humidity and a high dew-point play an important part in the causation of febrile diseases. It is not the sole cause, but there is no question that a high dew-point is a powerful agent; and we may conclude, in the language of another, "that a high dew-point has a tendency to produce injurious effects on the system; that it is often found to exist in unhealthy localities, or during pestilential times; and that it must assist much in the development of autumnal and periodic fevers, are facts which no one will question." We may go further, and affirm that yellow fever never prevails in a place, endemically or epidemically, unless there is a high dew-point. Indeed, heat, humidity, and a high dew-point are always present in summer, as is evident to the most common observer, in the rapidity with which butcher's meat takes on the putrefactive process; and the humidity of the climate is shown by the rapid oxidation of all articles of clothing, the rusting of keys in one's pocket, the mildew on linen clothing, the injury done to cloth garments, the mould on leather, &c.

It is the great humidity which renders the lower story, or ground-floor, of Fort Moultrie unwholesome and unhealthy for quarters, though not in casemates. Salubrious residences cannot be constructed directly on or near the ground in the southern country, but they must be elevated a few feet; and in no part of the United States are casemates proper for quarters, being always damp and unwholesome; nor can they, with the utmost care, be constructed so as to avoid the difficulty; and they ought to be occupied by human beings only in a state of siege. The mass of masonry in a casemate so rapidly and powerfully condenses the vapor of the atmosphere, as to render a casemate, in a short time, uninhabitable. The officers' quarters and men's barrack-rooms are as comfortable and as free from dampness as any rooms on Sullivan's Island, not being in casemates, and in the second story; the lower story, or ground-floor, however, is very damp, and unfit for residences; and the brick pavement\* in front is always damp, and covered with fungi. This story was but little occupied in 1852, principally by a few servants and the guard—the guard-room being on a level with the ground-floor of the barracks.

\* Brick is unfit for floors, unless previously dipped in boiling pitch or asphaltum.

6. *Drainage.*—There is no drainage on Sullivan's Island, except the most trifling surface drainage. The whole island is composed of sand, which is very porous, and water is found just below the surface in the dryest season: this surface water being always a mixture of fresh and salt waters, which is insalubrious. The tides wash up sand, mud, and slime, particularly on the back beach, which is exposed to the intense heat of the sun at the ebb, and permanently as the spring tides gradually subside to neap tide.

The water in the wells, even in the dryest summer, is always near the surface. There is a "potter's field" on the east end of the island, in a part termed the "Myrtles," and here the graves have to be bailed out, in the dryest season, just before interment; and in a wet season the water runs in faster than it can be bailed out, so that a weight has to be attached to the coffin.

Can Sullivan's Island be drained? The solution of this question is important. If the island cannot be drained, severe epidemics must occasionally occur, as they have always occurred, at intervals. Certain lots may be filled with sand, or superficially drained; but more than this is required, especially on the back beach. A thorough system of deep or sub-soil drainage over every part of the island is necessary, at least from the hotel (Moultrie House) on the east to the steam-ferry on the west; and as the settlement extends, the drains should also be extended. The faster the island fills up with inhabitants, the more essential are drainage and every part of sanitary police; for the more the island village assimilates to a city, the more necessary will sanitary measure become, and still more will the diseases resemble those of Charleston than hitherto. That the island can be drained, there is no doubt. General Totten assured me, in a conversation last spring, (1853,) that the measure is practicable. The General was on the island when the conversation took place. The sooner the island is drained, the better. In my humble opinion, nothing will more conduce to salubrity, or more surely prevent periodical visitations of epidemic disease, than a well-regulated system of drainage.

7. *Bad sanitary police.*—On Sullivan's Island there is really no sanitary police. From the first of May to the first of November, a small allowance is made by the village authorities for the purpose of removing the putrefying carcasses of animals, which float down the river past Charleston, and are carried by the current and tide on to the south side of the island, and these are usually got off in a putrid state; but from the first of November to the first of May, people are supposed to have no nostrils, lungs, nor stomach, and the bodies of dead animals are not removed. There are numerous small and crowded houses, in addition to the negro kitchens, which are occupied by Irish and other families, who are more filthy in their habits than the negroes; and for years the filth of all sorts—kitchen slops, and everything which can be mentioned—has been cast abroad, or allowed to accumulate. The privies are another nuisance. They are literally above ground; and in certain localities, in the heat of summer, the effluvia are very offensive. During the heavy rains in 1852, the water in the vaults—where there were vaults—was on a level with the surface of the earth; and north of Middle street, towards the back beach, the high tides floated out the contents of several, spreading them over the adjacent soil. The contents of the privies, with other filth, in such a porous soil as this, must undoubtedly affect the water to some extent, and in every respect contribute to insalubrity. No privy ought to be constructed in such a porous soil as this, without a vault of brick or stone work, rendered water-tight by cement.

8. *Bad water.*—The well-water of Sullivan's Island is brackish and unwholesome, and cisterns to the dwellings are as scarce and as valuable as diamonds from Golconda. Few of the houses have them, insomuch that a cistern is an exception to the general rule. The wells, water, &c., have been sufficiently spoken of under the head of drainage. The wealthy families, who reside on the island only in the summer season, are able to procure pure water in the neighborhood; but those who need it most—the poor, the miserable, and the degraded, who remain during the whole year—cannot get it. The water at Fort Moultrie—for drinking, culinary purposes, and washing—is cistern water, of which there is an abundance during the



rainy season: but in a time of drought the garrison has to be put on short allowance, the brackish water of the wells having to be resorted to for general purposes.

9. *Heavy rains.*—These were a cause—predisposing and exciting—of the malignant fever of 1852, both in Charleston and on Sullivan's Island, producing, in combination with other causes, yellow and severe bilious fevers. The summer of this year was very wet, the quantity of rain in each month being as follows:

Months.	Sullivan's Island.	Charleston.
May .....	4. 17	4. 22
June .....	8. 86	5. 18
July .....	5. 43	6. 93
August .....	4. 15	4. 21
September .....	11. 70	12. 27
Total quantity---	34. 31	32. 81

Whole quantity for the year: Sullivan's Island, 51.26 inches; Charleston, 49.72 inches.

The quantity of rain which fell in Charleston is taken from the tables of Dr. Dawson, City Register. From the records, we see that, both in the city and on the island, about two-thirds of the whole quantity of rain for the year fell in the five hot months—every one of which had more than an average quantity: and that by the first of September the earth was fully saturated, when 11 or 12 inches more were added, most of it in the first days of the month. The Register of Fort Moultrie shows that, during the first twelve days of September, 9.40 inches fell; and from the 7th to the 12th, inclusive, (six days,) there was no less than 7.80 inches, 1.30 inch per day—the earth being previously saturated; and it must be recollected that the epidemic broke out in a decided form on the 7th and 8th of the month, and that the first case of yellow fever occurred on the 11th: showing evidently that these heavy rains were the exciting cause, acting on systems predisposed to disease by heat, great humidity, and a high dew-point, by which malaria is rapidly evolved, and all acting in conjunction with other evident causes of disease. Perhaps the matter was rendered still worse by the dry weather and rapid evaporation which followed: for there was not a drop of rain from the 25th of September to the 9th of October, nor from the 14th of October to the end of the month—the whole of October being very fair, with only 1.20 inch of rain. From the 15th to the 25th of October, inclusive, at every meteorological observation, four times a day, the clearness of the sky was 10, which denotes clear sky without a cloud; prevailing wind, northerly. During the pouring rains of September, the whole country was nearly submerged, in consequence of which various types of fever prevailed; and on Sullivan's Island bilious and yellow fever were universal; the former being very common—indeed, so much so, as to merit the term *universal*—the only healthy spot in the vicinity of Charleston being the barren and circumscribed post of Fort Sumpter. Cases of “country fever” occurred at the village of Mount Pleasant. Under the head of drainage, the condition of Sullivan's Island was sufficiently shown, and more is not required.

We have considered the principal apparent causes of yellow fever in 1852, which appear to have been the same as those of previous epidemics; and they are: 1. Intemperance; 2. Fatigue and exposure; 3. Imperfect ventilation; 4. High solar heat; 5. Humidity and a high dew-point; 6. Defective drainage; 7. Bad sanitary police, which includes animal and vegetable decomposition; 8. Bad water; 9. Heavy rains.

These different causes are of more or less importance in the production of disease: for yellow fever may occur (as in 1852) in persons who are not intemperate, and have suffered no exposure or fatigue, and therefore these cannot be considered essential causes; but there are others



which are essential, without which the disease cannot exist, which are unavoidable and always present—as high solar heat, humidity, and a high dew-point; and there are important causes which are not unavoidable, and are removable, but, acting with the unavoidable causes, generate malaria, or the *materies morbi*, with wonderful rapidity—as bad ventilation, defective drainage, and a bad sanitary police generally; and which should be obviated without delay, in order to neutralize the unavoidable causes. Good drainage will remove another cause of disease—heavy rains—by running the water rapidly from the surface into the harbor; and thus it will be prevented from becoming stagnant and putrid.

A consideration of the causes of yellow fever brings us directly to the subject of contagion.

Entering the profession a believer in the contagion of yellow fever, my first experience with the disease changed that opinion; the two principal reasons for the change being, that the febrile contagion could not possibly have been imported, and that the physicians, attendants, &c., of the hospital, were remarkably exempt from the prevailing epidemic. Every subsequent epidemic has strengthened this opinion—none more than that of Fort Moultrie in 1852; so that, at the present time, I would as soon think of becoming an abolitionist as a contagionist.

Let us see what contagion there was in the Fort Moultrie hospital in 1852. It must be admitted that the physicians, stewards, and nurses of a yellow fever hospital are peculiarly liable to contract the disease, if it is contagious. During the epidemic, the surgeon, steward, and four attendants, all continually exposed for weeks together, had no kind of fever; three attendants and one cook had remittent fever in September, but nothing like yellow fever afterwards; and three attendants and one cook had yellow fever. Thus, we have 14 persons on duty in the hospital, of whom 6 had no kind of fever, 4 had remittent fever in the month of September, and only 4 had yellow fever. Throwing out the cooks, who were not so much exposed among the sick as the others, and we have 6 who had no fever, 3 who had remittent, and 3 who had yellow fever; and those 12 persons were exposed with the sick in an especial manner. We have, then, only 3 persons sick in 12, who had been exposed to yellow fever—a circumstance which seems incredible in a malignant disease of a contagious character. The whole of these persons were on hard duty, and had no regular rest at night—a circumstance which would predispose to disease—yet three-fourths of them escaped. This would not seem possible, nor is it so, with contagious diseases—the smallpox, for instance.

Having had much to say in relation to the drunkenness and worthlessness of a portion of the command during the autumn of 1852, it affords me great pleasure to bear testimony to the good conduct of the remainder, and especially of those on duty in the hospital. These were constantly on hard service with the sick during the day, and at night by detail; in all cases doing their duty with cheerfulness and alacrity. I have repeatedly seen the attendants carry the sick in their arms, in all stages of the disease, without flinching. If soldiers have some bad traits of character, they have also some good ones, as I have had reason to know in many epidemics; the class of reliable men, however, must be carefully separated from the unreliable, in all cases, for service in a military hospital. But the principle of importation and contagion would paralyze any military hospital, and will create a panic among the best troops in the world; and conscientiously believing that yellow fever is not contagious, I took special pains to eradicate the pernicious doctrine, declaring, emphatically, on all occasions, that the disease is never “catching” or contagious. On no account can such doctrines, discouraging to both sick and well, be tolerated in military hospitals, especially when one considers them false doctrines.

We know it is common to say “there are exceptions,” that “every one is not susceptible to smallpox,” that “persons escape it just as in yellow fever,” &c.; but what proportion of those who have not had it can be expected to escape, and do actually escape? It is not so with yellow fever, scores and hundreds escaping in our cities in epidemic seasons, and those who have often been exposed in all ways. No one could expect that three-fourths of the attendants in a smallpox hospital would escape, as was the case in the yellow fever hospital at Fort Moultrie.

Again: children, and those born and raised in a place where yellow fever is endemic, rarely have the disease. But it is not so with smallpox; all are liable to it, in all circumstances, in all climates, and at all ages, from the cradle to the grave.

There is great difference in the recurrence. Those who have had yellow fever are not considered so liable to it as before; but a recurrence is common, and an absence of two or three years in a cold climate renders a return to a fever region hazardous. But not so with smallpox; for a person who has once had it may consider himself safe from all future attacks for the rest of his life, in all situations, as well at the equator as in the frigid zones. Dr. Gregory says that writers have made different calculations of the liability to recurrence, as 1 in 8,000, 1 in 10,000, and 1 in 50,000.

Yellow fever ceases, is annihilated, by the occurrence of frost, like all malarious fevers. No contagious disease is affected in this way by the occurrence of cold weather, as smallpox, measles, the typhus of Ireland, and the typhoid fever of New England—allowing the last two to be contagious fevers. None of these are checked or rendered milder by cold weather, and the most of them, if not all, are aggravated by winter.

Yellow fever does not spread by contagion when carried from a city to the country. Instances without number might be cited. It is a well-known and established fact, one which has been acknowledged for years.

In yellow fever hospitals, physicians, nurses, and all persons on duty, are remarkably exempt from the disease.

Dr. Rush says that "it does not spread in yellow fever hospitals, when they are situated beyond the influence of the impure air in which it was generated."

But how is it with ship fever, the real typhus? Do the physicians, nurses, and attendants of all sorts, escape in these fever hospitals, particularly those about the city of New York, so universally as in the yellow fever hospitals? On the contrary, all these persons are so commonly attacked, and so many have died, including eminent physicians, that it is difficult to resist the conclusion of its being a contagious disease. As I have often remarked, I would as soon become an abolitionist as a yellow fever contagionist.

I have thus given an account of the epidemic of 1852—roughly drawn out, to be sure, and at odd times, but it is correct.

I also respectfully submit the following additional information—much more than I expected to obtain—in relation to the fever epidemics of Sullivan's Island; also some remarks in relation to the diseases during the year 1853:

1795.—An aged gentleman, one of the most reliable men in Charleston district, informs me that he perfectly recollects when yellow fever occurred in a certain locality on Sullivan's Island, in Middle street, between where the "Alhambra" now is and the fort parade, and there were several deaths. The cause was this: A large lot was low and quite wet, being, at that day, little better than a marsh; and, in the spring of this year, the lot was raised by filling in with sedge and marsh-mud, instead of dry sand; and the consequences were dreadful. Yellow fever broke out in the house situated on this lot, and it was desolated.

1800.—"We have not yet made a sufficient number of observations to determine accurately how far it is possible for strangers to avoid our yellow fever, by residing, while it is prevalent, entirely on Sullivan's Island, or in the outskirts, or open, airy environs of Charleston. In one case, the disease proved fatal to a gentleman on Sullivan's Island, who had not been off the island for six weeks before; in another, to the head master in the college grammar-school, who had confined himself to the yard and vicinity thereof from and after the first of July. In all other cases that have come to my knowledge, the persons making the experiment, and who have taken the disease, had occasionally visited or passed through the thickly-settled parts of Charleston."—*Dr. Ramsay, Medical Repository, vol. 4, p. 219.*

The case of the master of the grammar-school shows that complete isolation is no protection from yellow fever in an epidemic season. See also the cases in the New York penitentiary, in



1805; the Richmond penitentiary, in 1806; the instance in St. Mary's street, in 1838; and Norris, in Augusta jail, 1839.

1802.—“Charleston, in the year 1802, was afflicted with four epidemics—the smallpox, the measles, the influenza, and the yellow fever.” This shows that there was an “epidemic constitution of the atmosphere,” so much ridiculed by some; at any rate, four distinct diseases were epidemic. We would like to know what vessels imported the smallpox, the measles, the influenza, and the yellow fever; and from what part of the world these diseases were imported.

“To others (strangers) arriving in the same season, Sullivan's Island afforded a safe retreat till the danger was over. Exceptions to this have heretofore been very rare, and generally could be accounted for from some irregularity; but, in the year 1802, five cases of yellow fever (and two of them fatal) occurred in one house on that island, while the other inhabitants were generally healthy.”

“No instance can be recollected, in which there was any ground to suppose that the yellow fever was either imported or had been contagious. No physician, nurse, nor other person exposed to contagion, from their intercourse with persons laboring under yellow fever, caught the disease. It was exclusively confined to strangers; and among them there was no evidence of its being communicated from one to another.”—*Dr. Ramsay, Med. Repos.*, vol. 6, p. 311.

1807.—“The disease in no instance proved contagious. Some who had taken it retired to the adjacent country, but oftener to enjoy the salubrious air of Sullivan's Island. In both cases, whether they lived or died, the disease terminated with them. I mention this circumstance with pleasure, as it will assist in confirming your learned and judicious observations on the absurdity of quarantine laws.”—*Dr. Ramsay to Dr. Mitchell, Med. Repos.*, vol. 11, p. 234.

1817.—The next account of yellow fever on the island is in this year. Dr. Strobel's statements in relation to it have been sufficiently alluded to; and we will simply remark, in this place, that the large number of persons who went to Sullivan's Island to avoid the fever—“many of them in indigent circumstances,” and, of course, “crowded together in narrow, confined apartments”—may have engendered fever as well as in Lynch's lane, in Charleston; and the whole of Dr. Strobel's statement is as much in favor of the generation of the disease on the island, as of its importation from the city of Charleston. How came the fever in Lynch's lane?

1824.—This year the epidemic yellow fever raged on Sullivan's Island, as well as in Charleston. We will refer to Dr. Simons for the facts, already briefly noticed.

“Independent of the distresses which occurred in the city, the disease broke out with dreadful malignancy among those who had sought refuge from its ravages on Sullivan's Island, a complete sand-bank, about six miles from the city, which has hitherto been considered a secure retreat. The cause of its occurrence there may be from the dense population, the uncomfatableness of the houses, the accumulation of filth and formation of made land, and the imprudence of persons residing there under the full confidence of their exemption. Each and all of these may have operated. Other causes may be offered, and have been mentioned, such as miasma from the contiguous main land, (but the inhabitants in the village, on that land, were exempt from the disease,) and to a canal near the fort, where the offal was thrown; but, if this was the sole exciting cause, it appears singular that the soldiers should have been the last affected, and they but partially. I am firmly persuaded very many received the disease in town, and that it remained latent until some exciting cause brought it into action; yet there were many children who took the disease months after they left the city, and these must be attributed to the first cause.”—*Carolina Jour. Med. for January*, 1825.

The Army Med. Statistics, p. 201, have the following statement: “On referring back to 1824, it is found that, whilst this disease (yellow fever) prevailed with great malignity in the city, not more than twelve cases, none of which proved fatal, appeared on the island in a strength of seventy.”

This corroborates the statement of Dr. Simons, that the garrison of Fort Moultrie was lightly and “but partially affected” by the epidemic of this year. The fever was much less severe in the fort than in the adjoining village of Moultrieville; for, on the island, apart from the garri-



son, there was great sickness and mortality. From what is now called Accommodation street, by the "Alhambra," to Fort street, by Mr. Blacklock's house, there was great mortality: and, if I am not mistaken, it was during this summer that Mr. Goodman's family, residing on Middle street, between Accommodation and East streets, suffered so severely. It was a distressing season.

Some reference to the ditch or canal of the fort, mentioned by Dr. Simons, will be made when we come to the epidemic of 1852.

1827.—Yellow fever again prevailed on the island among the garrison of Fort Moultrie. Dr. Charles F. Luce, Assistant Surgeon U. S. A., died of this disease September 27th, and there were several other deaths among the officers and men. Dr. Lebby informs me that Dr. Ball, who was then practising on the island, was employed to take charge of the hospital after Dr. Luce's death; and he thinks the troops moved out of the fort and encamped on the "curlew ground," on account of the fever. Major Lowd, U. S. A., informs me that it was very sickly at Fort Moultrie during the summer of this year, and that there were many deaths. One cause of the fever in the fort was supposed to be, that repairs were going on during the hot weather, and that the lower floors were torn up, by which a large surface of wet or moist earth, and some accumulation of rubbish, were exposed. There were also much sickness and several deaths on the parade, and also among the citizens on the back beach; and, altogether, it was a year of much distress.

Yellow fever prevailed to such an extent in Charleston, that it may almost be considered epidemic. According to Dr. Simons, there were 67 deaths.

In August of this year the disease was imported from Charleston to Fort Johnson, as stated in Dr. Lebby's letter. The facts are briefly these: Three United States soldiers stationed at that post remained a night in the city during the existence of yellow fever; they returned to the post, and the ninth day after they were attacked with the disease; they were sick in company quarters, there being no hospital for them; "ten or twelve men slept in the same room with them, who were alike strangers to the climate," and "yet there were no other cases of disease in the garrison." [See Dr. Lebby's letter.]

Here is an instance of genuine importation, and, under the most favorable circumstances, the disease did not spread. What becomes of the contagion of yellow fever?

How came the yellow fever in Charleston? No one has attempted to prove importation from the West Indies; nor can I find any account of the diseases of this year in Dr. Strobel's book, nor in Dr. Hume's paper of December 20, 1853.

1831.—This is not put down as a year in which yellow fever occurred in Charleston; but Dr. Lebby gives some account of the fever at Castle Pinckney: "One of the Irish laborers died in the city of supposed yellow fever. Several other cases of fever occurred afterwards among the laborers," which Dr. Lebby thinks were cases of bilious remittent fever.

1832.—The information for this year is derived from Dr. Lebby's letter to Dr. Strobel. "The disease appeared in the city of Charleston, and from two or three of the first cases being traced to the Irish laborers at the castle, it was supposed to have originated there." A deputation of medical gentlemen visited the post, who thought the disease was caused by a "quantity of shells," which had been used "for the purpose of filling up the parade-ground;" and others thought the disease originated from the "opening of two privies in the north wall, which had been bricked up for a number of years—their contents, in a decomposed state, taken out in the month of August, and exposed to the action of the sun, on the bank near by, together with the exposure of the lower story of the quarters to the action of the atmosphere—it being necessary to rip up the floors, which had sunk down to the surface of the ground, and had remained in that state for some years."

Whether the disease arose from the shells on the parade, or the privies and the ripping up of the old floors, or both, it is evident that the disease was of local origin.

Dr. Lebby goes on: "Among those attacked, were Captain Brewerton, the master carpenter, two masons, and several black laborers. Yellow fever prevailed in Charleston that season, I

think, to some extent. The venerable Dr. Philip G. Prioleau attended Captain Brewerton with me as a consulting physician."

Dr. Lebby considers the cases brought to Fort Johnson as bilious remittent fever. That it was severe, appears from the fact that Dr. Prioleau assisted in the treatment of Captain Brewerton, and that "several black laborers" had the fever.

1834.—There were 46 deaths from yellow fever in Charleston this year. In the third quarter there are five cases reported at Fort Moultrie, two of which proved fatal. Of these cases, two originated in Charleston, and the other three at Castle Pinckney.

Severe yellow fever prevailed at Castle Pinckney, and there were several deaths; among others, Captain H. W. Griswold, 1st artillery, who died October 23d.

Here we have 46 deaths from yellow fever in Charleston, and several at Castle Pinckney, showing that there was an epidemic tendency, if there was no real epidemic. How came there so much yellow fever in Charleston and at Castle Pinckney during this year? for we have no account of importation.

Castle Pinckney was used as a lazaretto previous to 1832. It was again recommended to the city council, December 20, 1853, by their committee, for this purpose; and it was on the point of being turned over by the government, when somebody had the good sense to put a stop to the project. A worse place for sick cannot well be chosen. The castle is surrounded by marshes; in winter, it is bleak and disagreeable; in summer, it is damp, unwholesome, and unhealthy.

1838.—Yellow fever attacked the mate of one of the lighters in the service of the government, as related by Dr. Lebby: "He slept one night in the city, in September; on the fourth day he sickened, and, although he was among children at Sullivan's Island, *and others who were liable to contract the disease*, no other instance of it occurred in the family." And it is contended that this is a contagious disease!

1839.—Captain R——, of the Valiant, taken with yellow fever June 16th. This case, by Dr. Lebby, has been related already. We will make a short extract:

"The next case (next to those on the Valiant and Sea Flower) occurred at Fort Moultrie—an Irishman, who had not been in the city from May; this occurred in the latter part of August. On the 18th September, the assistant of Captain Bowman was taken with yellow fever. He had been in the city on the 10th and 17th. He recovered. On the 20th Captain Bowman was taken with bilious inflammatory fever. He had not been from Sullivan's Island during the season. Several other cases occurred among the families residing back of the fort; while they assumed a continued form of fever, and in many of their symptoms were nearly allied to yellow fever, it was very doubtful if they could be properly placed under the head of genuine typhus icterodes. Many cases of inflammatory or broken-bone fever (so called) occurred in October among the workmen."

The first case noticed in the above extract, "the Irishman, who had not been in the city from May," did not come in contact with the previous cases, and originated on the island; so that we have several points of origin in and around Charleston, as Fort Moultrie, Fort Johnson, the Valiant, and the Chatham, Elizabeth Bruce, and Leonore, not one of which had the least communication with the Burmah (the vessel which the contagionists say brought the fever from Havana), and could not have contracted the fever from her.

Dr. Lebby states to me as follows: "In 1839, the square bounded by Hall and Blacklock's houses on the west, the back beach on the north, and Mr. Hilliard's house (near Accommodation street, by the "Alhambra") on the east, including the fort and fort inclosure, suffered with genuine yellow fever. Colonel Blanding died that year on the island. He occupied either Dr. Hall's or Mr. Deas's house—I think it was Mr. Deas's. It was supposed that he contracted the disease in the city; but I am of the opinion, and was at the time, that it was not the case. He came up to the city in the 8 o'clock, A. M. boat, rode to the bank in a carriage, and returned to the island at 1 o'clock, P. M.—always riding in a carriage to the boat. In his case there were, as I was then informed by his physician, two distinct paroxysms; so that quinine was administered during the intermission. In the third paroxysm, black vomit came on and destroyed him."



"Mr. Graham, the inspector of the engineer department, a short time after, came up to the city in the fort barge, leaving the island about 9 o'clock, A. M., and returning to dinner. He was taken with well-marked yellow fever on the seventh day after, and black vomit came up on the third night. He recovered. Mr. G. lived in the fort, occupying the lower eastern rooms of officers' quarters. Native of Pennsylvania; resided at the fort about a year."

"Captain Bowman was extremely ill at the time with a high grade of fever, which, to my mind, would have been yellow fever, had he not suffered with the disease in New Orleans previously; the peculiar characteristics of this fever, except the inflamed eye and black vomit, being present."

"Every stranger connected with the fort, who resided in the district above described, (from Waring's on Accommodation street, to Blacklock's house near Fort street,) suffered with yellow fever, or severe bilious remittent. Of the latter, were those who had resided in Charleston, or some other southern climate, previously."

"Col. Blanding's case was similar to that of R. (Valiant), stated by me in a letter to Doctor Strobel, to which I refer you. R. was in command of the vessel, anchored for several weeks off the point of Sullivan's Island, and he had not been to the city for some time. The second officer of this vessel was brought into hospital before R. died, with well-marked yellow fever. Neither had been in the city for some time; they were natives of Massachusetts, and were afraid of the summer months—so much so, that R.'s brother had obtained leave of absence to go north by the first of June. Not a single stranger who composed the crew of that vessel escaped; fortunately R. was the only death."

"These circumstances will account for Mr. Graham's attack. He would have been sick if he had not visited the city. He was exposed to the same atmosphere at the fort that the others were who had the disease, and who had not been off the island for weeks. Captain Bowman had not been as far as the episcopal church for several weeks before his attack. Davis's family occupied a small house on the northeast corner of the fort square (parade on the back beach); all suffered with the same form of the disease that Colonel Blanding did. Recovered."

Dr. Lebby says: "I have seen, during my professional career, a large amount of fever; and I must confess I have seen, as yet, not a solitary instance of yellow fever which has induced me to regard it as contagious. On the contrary, from personal observation and experience, I am a decided believer in the non-contagiousness of yellow fever."

It appears that Mr. Graham, mentioned above, resided on the lower floors of the fort barracks, which floors are always insalubrious and wholly unfit for quarters. December 13, 1853, I officially reported these quarters on the lower floor as unfit for use, on account of their insalubrity, and they ought never to be occupied. It is more reasonable to suppose that Mr. Graham contracted the fever in his quarters than during a short visit to the city; at any rate, the quarters occupied by him, with all others on the ground-floor, are decidedly unhealthy. Davis's family suffered from severe fever, the locality being evidently unhealthy. This very district suffered from yellow fever in 1824 and 1827, and we may add 1795, 1802, and 1852.

1850 was an epidemic year, though yellow fever did not prevail. This has been sufficiently treated of.

1852.—The yellow fever of this year needs no further remark, except in so far as relates to the ditch which Dr. Simons speaks of in treating of the yellow fever of 1824. This fever of 1824 was much less in the garrison than in other parts of Sullivan's Island; affected the troops but partially, and the cases among them were not malignant, as has been already shown. It may be that offal was thrown into this ditch—and it was certainly a very strange proceeding, if this was allowed—but we have no means of ascertaining, unless one is permitted to judge of the cause by the effect. This ditch has been accused of high crimes and misdemeanors, according to men's fancies, and often unjustly. In 1850, it could not have been the culprit; for the epidemic held off from the garrison in a remarkable manner, from fort and parade, for many days after the disease had become general over the island, as has been previously mentioned. Some persons attempted to get up the same ideas in 1852; but the ditch was never cleaner than



during this summer, owing to the heavy rains, which swept out everything from the ditch to the back beach, like the rush of waters in the Mississippi. There are living witnesses to this fact. Again: the side of the parade on this ditch was not the most sickly, but the side opposite was by far the most unhealthy; nor can the ditch be considered the cause of yellow fever at the steamboat-landing on the west, and near the Moultrie House on the east, nor of the universal bilious fever which prevailed. These accusations are “for Buncombe.”

But we will admit everything that is wished and asked; that the ditch was filthy, and that the malaria generated from it was the cause of the pestilence. What does this prove? Simply, that the post and island are not beyond the “northern limits” of yellow fever.

The year 1852 was a sickly one. Cholera prevailed to such an extent in the city and vicinity, after the yellow fever had ceased, that at one time it might be considered epidemic.

“December 5. Colds and coughs prevail a good deal on Sullivan’s Island, and there is some dysentery.”

“December 12. Colds and coughs are prevalent; and, taking the whole country together, there is an epidemic influenza.”

“December 26. Since the 21st it has been rainy and foggy, cold and warm. The last three days have been warm, the weather unpleasant, and the dampness excessive. There is some cholera in town; in consequence of which, I officially recommended (December 24) that none of the men should be permitted to spend the night there.”

The cholera extended into the next year (1853): for, January 1: “The weather has generally been warm and damp, with frequent fogs. There has been a good deal of cholera in town; so much, that some alarm is exhibited.”

“January 9. The weather has been colder during the past week than before, the thermometer having been as low as 36°. This seems to have had a favorable effect upon the cholera in Charleston. In the week before last, there were 22 deaths reported from cholera; last week, 23 deaths—10 white, and 13 blacks. There has been a good deal of alarm; country people have left, and some of the medical students at the college ‘ingloriously fled.’”

“January 15. Occurred the only case of real cholera on Sullivan’s Island—an old negro. The stage of collapse is fully formed, and his condition is considered hazardous.” Recovered.

“During this time diarrhœa has been prevalent, especially among the blacks of Sullivan’s Island; showing that there was a disposition to the same type of disease as prevailed in Charleston.”

A brief account of the diseases in 1853 will be given.

*Abstract of the quarterly reports of sick for the year 1853.—Officers and men.*

MONTHS.....	Jan	Feb.	Mar.	Apr.	May	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Deaths.	Aggregate strength.
MEAN STRENGTH.....	89	91	92	74	83	53	42	44	47	49	54	----	-----	-----	718
DISEASES.															
Febris continua .....	-----	-----	1	-----	-----	-----	-----	-----	-----	1	-----	-----	2	-----	-----
Febris remittens .....	-----	-----	-----	3	1	-----	-----	-----	-----	-----	-----	-----	4	-----	-----
Diarrhœa.....	-----	-----	-----	1	-----	-----	1	2	1	1	-----	-----	6	-----	-----
Dysentery acuta .....	-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	2	-----	-----
Dysentery chronica .....	-----	-----	-----	1	-----	1	-----	-----	-----	-----	-----	-----	2	-----	-----
All others .....	6	6	5	6	5	5	4	3	5	8	6	-----	59	1	-----
Total .....	6	7	7	11	6	6	5	5	6	10	6	-----	75	1	-----

Average mean strength for the year: Officers, 6.54; enlisted men, 58.72: total, 65.27.

One died in August of chronic bronchitis, one discharged in October, and seventy-three returned to duty.

The old garrison left the post on the 18th of November; hence, the month of December is not included, in order to show the effect of residence in producing climatic disease.

*Women, children, servants, &c.*

MONTHS.....	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Deaths.	Aggregate strength.
MEAN STRENGTH.....	73	72	71	77	75	63	63	62	60	55	55	37	-----	-----	763
DISEASES.															
Febris continua .....					1	2	1						4		
Febris intermittens quotidiana.....										1			1		
Febris intermittens tertiana.....				1						1			2		
Febris remittens.....				5	9			3					17		
Diarrhœa.....		1	2		3	2	1	3	3	3	2		20		
Dysentery acuta.....	2							1					3		
All others.....	6	15	8	12	7	1	4	6	12	6	7	6	90	1	
Total.....	8	16	10	18	20 <sup>a</sup>	5	6	13	15	11	9	6	137	1	

Average mean strength for the year, 63.58.

All women, children, &c., who came from Florida with the 1st artillery, in December, are excluded; only the more permanent residents of the garrison being included, in order to show the effect of residence in producing climatic disease.

From the foregoing tables, we find that the troops suffered from all diseases in nearly the proportion of 1.14 cases to 1 person, or every officer and man was sick, on an average, once in the year, and 10 of them were sick twice; and if we take, instead of the average mean strength, the greatest absolute number present in any one month, there will be only 1 sick in about 1.25; whereas every woman, child, servant, &c., was sick nearly 2.17 times in the year, taking the average mean strength; and, taking the greatest number of persons, 1.75 times during the year. There is still greater difference when we consider climatic diseases, for we find only 16 cases, or about 1 case in 4 persons, among the troops during the year; while among the women, children, &c., in the same period of time, there were no less than 47 cases, or about 3 cases to every 4 persons. It is also to be recollected that 1853 was one of the most healthy years known, and, although diarrhœa was pretty common, there does not appear to have been a single case of cholera infantum recorded—an unusual circumstance, though the disease was on the island. I lost a little patient in August with malignant cholera infantum, east of the fort, between it and the Moultrie House, on Middle street; and there were a good many other cases of the disease. I have often regretted that a record of this kind had not been kept from 1850; for the difference between the two classes, the regular soldier and non-military persons, would have been much greater than it now appears to be.

In proof of the great salubrity of Fort Moultrie and Sullivan's Island, it is common to refer to the Army Medical Statistics, p. 201, from which it appears that the annual ratio of mortality in Charleston harbor (Forts Moultrie, Pinckney, and Johnson) is 2.60 per cent. During the same period, the annual mortality of Fort Moultrie was 3 per cent. It must be recollected that these are just what they are intended to be—statistics of picked men. From them are excluded the old, the young females, and invalids; and no one is permitted to enter the service but

<sup>a</sup> One child died in May, of convulsions.



the strongest and most healthy, for obvious reasons. As statistics of strong men for active service, being also the first of a series, they are valuable; but, as general vital statistics, showing the salubrity of a country, and detailing facts connected with the health, longevity, mortality, and consequent prosperity of all classes of citizens, they are of no value whatever.

As 1853 was generally healthy, but few remarks in relation to the diseases of the year are required.

Fevers were more prevalent in April and May than in the usual fever months of August, September, and October. The very great rains in 1852, from May to September, had saturated the earth; there had been considerable winter rain, and the last half of April and almost the whole of May were hot and dry; the action of the sun on the porous and sandy soil produced disease. A few brief remarks may not be uninteresting.

Family of Captain E——, northwest of Fort Moultrie, on Cove street. April 19th, a colored girl taken; May 5, a colored child taken; and May 12, son—all with remittent fever. None of them had been from the island.

Family of Major H——, northwest of the fort, in Cove street. Mrs. H. taken April 25th; an Irish servant girl on the same day; Major H. on the 26th—all with remittent fever. Not one of them had been from the island.

Family of Captain P——, west of the fort, in Middle street. Mrs. P. taken with tertian intermittent, April 26; one son, April 30; two sons, May 1; and a fourth son, May 4th—all with remittent. Two of them were attacked the second time on the 14th of May. Not one of these persons had slept away from Sullivan's Island for two years.

One private of the garrison taken April 11th; one, April 26th; one, May 18th; all of remittent.

Sergeant Riley's child, on the east side of the fort parade, taken with remittent fever on the 3d of May.

Sergeant Williams's child, on the west side of the parade, was taken with remittent fever on the 5th of May.

Eleanor Brassard, daughter of Private Brassard, on the west side of the parade, was taken with continued fever on the 31st of May. None of the last three had been to town or from the island.

Variola, owing to the universal neglect of vaccination, prevailed to a considerable extent in Charleston during the winter of 1853-'4, but there were no cases of the disease on Sullivan's Island. The universal neglect of vaccination in the country, and even in the city, is astonishing. From this epidemic there appears to be no reason for distrusting the preservative powers of the vaccine disease; but, on the contrary, our faith in it should be confirmed. No doubt, the operation is often performed with bad matter. In the last part of the winter, I revaccinated a lady, by request, whose husband had formerly studied and practised medicine, and subsequently became a preacher; great irritation and inflammation came on; the axillary glands were swollen; there was fever; and considerable pus formed at the point of operation, which the husband, the ex-doctor, pronounced to be genuine vaccine matter; and I verily believe that he would have attempted to propagate the disease, had a chance presented. It is important that every one should be vaccinated; and it is more important, perhaps, that good matter should be employed. In revaccinating in this particular year, more local irritation supervened than I have ever before known. No reason can be given, but such is the fact; while the real vaccine disease went its course as usual.

Other eruptive fevers were not uncommon in Charleston, as measles and scarlatina, but none of them made their appearance on Sullivan's Island.

Having given an abstract of the climate of Sullivan's Island from 1849 to 1853, inclusive, particularly of the summer climate, we will proceed to a few remarks on the diseases.

"Fevers are the proper endemics of Carolina, and occur oftener than any, probably than all, other diseases. These are the effects of its warm, moist climate, of its low grounds, and stag-



nant waters. In their mildest season, they assume the type of intermittents; in their next grade, they are bilious remittents; and, under particular circumstances, in their highest grade, constitute yellow fever."—*Dr. Ramsay, Hist. S. C., vol. 2, p. 97.*

We have known almost all kinds of fever to originate on Sullivan's Island—intermittent, remittent, congestive, and yellow fever; but the most usual form of fever is the common bilious remittent. Not a summer passes without it, more or less; sometimes it is mild, at others severe. Fevers are so common on the east end of the island, that this locality is considered unhealthy.

Cholera infantum is indigenous, as might be expected from the proximity of the island to the city of Charleston, in the low country, and in a hot climate, with a humid atmosphere and high dew-point. The effect of change in this disease is wonderful, not in the acute stage, but when it has become chronic to a certain extent. Children who have had the complaint in the city are frequently sent to the island to recover their health and strength, and the benefit derived from the change is often surprising; on the other hand, when the acute stage of the disease has been spent on the island, we have been anxious that a change should be made to Buncombe, the north, or even to Charleston. We have known little patients to improve greatly by a removal to Charleston, the strong and damp winds of the island appearing to disagree with them. Change, of almost any kind, seems to work wonders in the chronic state of this disease.

Chronic diarrhœa and dysentery, in adults or children, are serious complaints in summer, either in the city or on the island, and such patients should have a change of climate without delay.

Sullivan's Island is an improper residence for persons affected with chronic bronchitis or phthisis pulmonalis. In summer, it is too hot, and the winds are too bleak and damp; and in winter, the cold and strong winds render it a very undesirable resort.

Asthma: this singular complaint is often greatly benefited by an island residence, and the winter often agrees with persons having it. Instances have occurred of persons having the disease being able to reside here comfortably in summer, who were forced to remove as the winter winds came on. Others cannot reside here comfortably at all.

Chronic rheumatism and neuralgic pains are not often benefited by a residence on the island, but the contrary. The climate, both winter and summer, is too severe for persons afflicted with these complaints, and I have known such patients obliged to leave the island after a residence of a few days.

Vermes are more common among children than in any part of the United States in which I have practised medicine. The long round worm (*ascaris lumbricoides*) is referred to. The best remedy I have found is termed the *German worm powder*, sold by some of the apothecaries in Charleston. *Spigelia Marilandica* has always been inert.

Boils, whitlows, carbuncles, and all sorts of abscesses and eruptions, are remarkably common. This is said to be the case in Charleston. These are supposed to be owing to the long-continued summer heat, though many consider the stimulation of sea-bathing to be a prominent cause.

Persons in a state of debility from attacks of almost any acute disease, as fever, cholera infantum, dysentery, &c., often come from Charleston to the island, and recover their strength and appetite in a short time; and those who suffer from the same diseases on the island are equally benefited by a change to the upper country, as already stated under the head of cholera infantum.

From the situation and physical characteristics of the country around Charleston, including Sullivan's Island, the summer climate must be enervating, and most persons would improve by annually spending July and August in a more elevated region.

## DISEASES.

In examining the following statistical tables, which have been compiled from abstract No. 1 of this division, being that for the South Atlantic Region, the fact that the troops stationed in Charleston harbor constituted the greater proportion of the army serving in that region, and that, therefore, the results are mainly applicable to that locality, should be remembered.

In this connexion, particular reference is made to the high ratio of cases of phthisis pulmonalis exhibited in the table of diseases of the respiratory system. The original records have been re-examined in this particular, and are correctly transcribed. The cases are referred to, and not the deaths; for the reason, that soldiers afflicted with this disease, who have friends and a home to go to, often solicit and obtain their discharge from the service. The statistics corroborate the statement of Surgeon Porter, that "Sullivan's Island is an improper residence for persons affected with chronic bronchitis or phthisis pulmonalis." How much is this result due to the "hot climate, humid atmosphere, and high dew-point?"

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	2,772	1,289	6	465	2
Second quarter.....	2,875	1,575	15	547	5.2
Third quarter.....	2,736	2,362	16	863	6
Fourth quarter.....	2,818	1,644	21	583	7.4
Annual ratio.....	2,800	6,870	58	2,453	20.7

It appears from this table that the average proportion of cases treated, to the number of men, is 2.45 to 1, annually; and that the corresponding ratio of deaths is 1 to 48, or about 2 per cent. The proportion of cases treated, to the number of troops, is 1 to 118, or 0.84 per cent.

Exclusive of yellow fever, the annual ratio of deaths to the mean strength of the forces is 1 to 53, or 1.9 per cent.

## FEVERS.

Quarters.....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength.....	2,772		2,875		2,736		2,818		2,800			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris continua communis.....	7	0	44	0	15	1	14	0	80	1	1 in 80	28
Febris intermittens quotidiana..	13	0	39	0	73	1	21	0	146	1	1 in 146	60
Febris intermittens tertiana....	53	0	34	0	64	0	70	0	221	0	0 in 221	79
Febris intermittens quartana....	16	0	10	0	9	0	17	0	52	0	0 in 52	18
Febris remittens.....	9	0	31	0	164	3	61	2	265	5	1 in 53	94
Febris typhus.....	1	0	2	1	14	2	4	0	21	3	1 in 7	7
Febris typhus icterodes .....	0	0	3	1	5	0	32	4	40	5	1 in 8	14
Total .....	99	0	163	2	344	7	219	6	825	15	1 in 75	294

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	2,772		2,875		2,736		2,818		2,800			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica-----	0	0	0	0	0	0	0	0	0	0	0	0
Diarrhea-----	49	0	204	2	320	2	203	2	776	6	1 in 129	277
Dysentery acuta -----	29	0	101	0	78	0	57	0	205	0	0 in 265	94
Dysentery chronica -----	5	1	4	0	6	0	10	2	25	3	1 in 8	9
Enteritis -----	3	0	2	1	0	0	1	0	6	1	1 in 6	2
Hepatitis acuta-----	2	0	0	0	0	0	1	0	3	0	0 in 3	1
Hepatitis chronica -----	0	0	0	0	1	1	1	0	2	1	1 in 2	0.7
Obstipatio -----	30	0	50	0	95	0	78	0	253	0	0 in 253	90
All other diseases of this system-----	62	0	121	0	196	1	86	1	465	2	1 in 232	166
Total -----	180	1	482	3	696	4	437	5	1795	13	1 in 138	641

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters. ....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	2,772		2,875		2,736		2,818		2,800			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica	8	0	7	0	4	2	16	0	35	2	1 in 17	12
Catarrhus.....	291	0	165	0	307	0	212	0	975	0	0 in 975	348
Phthisis pulmonalis.....	2	1	8	1	8	0	8	3	26	5	1 in 5	9.2
Pleuritis.....	9	0	11	0	3	0	6	0	29	0	0 in 29	10
Pneumonia.....	2	0	3	0	3	0	4	0	12	0	0 in 12	4
All other diseases of this system.....	2	0	5	1	3	0	2	1	12	2	1 in 6	4
Total .....	314	1	199	2	328	2	248	4	1089	9	1 in 121	389
Rheumatismus .....	75	0	83	0	76	0	70	0	304	0	0 in 304	108

The quarterly reports of sick are without special remarks of interest, except those which are embraced in the very elaborate report of Surgeon Porter, above given.

The influenza, noted as prevalent in 1843 in every region yet considered, appeared at Forts Moultrie and Johnston, and Oglethorpe Barracks, in August of that year. At the post last named, it remained till some time in September.



## SOUTH INTERIOR REGION, No. 1.

THE region designated as the South Interior, No. 1, embraces that portion of the territory of the United States which is occupied by the States of Georgia, Alabama, Mississippi, and Louisiana. The principal military stations are Fort Jesup, Baton Rouge, and New Orleans Barracks, Forts Pike and Wood, and Mount Vernon and Augusta Arsenals.

## MEDICAL TOPOGRAPHY AND DISEASES OF FORT JESUP.

By Surgeon P. H. Craig: 1839.

This post is in about latitude 31, longitude 17 west of Washington city, on the dividing-ridge of the waters of Red river and the Sabine, and equi-distant from each, being about 25 miles, and 100 miles due north of the Gulf of Mexico; the ridge, or high land, has a bearing of a north and south course; the streams on the north, or northeast side of the ridge, mostly empty into the Spanish Lake; its nearest point being about 12 miles north of Jesup; the lake disembogues into the Red river 8 or 10 miles above Natchitoches. There are other streams heading southeast of the post that fall into the Red river some distance below Natchitoches. All the streams on the Sabine valley side drain directly into the Sabine; there being no lakes, ponds, or marshes intervening.

The elevation of the site of the post above the low lands, lakes, and rivers, has never been ascertained, but must be considerable, as the water is very rapidly carried off.

The face or aspect of the country, on both sides of the ridge, is rolling and broken; some of the creeks have small bodies of good land bordering on them, of a stiff black clayey soil; and the hills, a poor thin gray sandy soil, and a hard red clay-bottom or sub-soil. There are but few mineral productions discoverable: a kind of limestone is found in places in detached masses, a considerable quantity of which has been procured for building; the nearest quarry is within half a mile of the post, in a due east course.

Pine is the most abundant timber; the high lands are covered with it; having oak and hickory thinly intermixed. On the creek bottoms, beech, red and black gum, sassafras, mulberry, and occasionally cypress, form the growth.

The summer usually commences about the 1st of May, and continues until the last of September. The days are very hot from 10 o'clock until sunset; the thermometer generally ranging from 76 to 90 and 96; the nights are often cool and comfortable, having generally a refreshing breeze from the south and southwest, in the direction of the Gulf and Bay, nearly every evening after 9 or 10 o'clock. The rainy season commonly begins in the month of February, and continues until the first or middle of May, with intermission.

The winter season is variable, often rainy, and frequently changing from cold to warm, sometimes causing a thermometrical difference of 20 degrees or more in the course of the day.

The summer months always produce most disease, particularly during August and September. The post is not distinguished by the prevalence of any particular disease. The most frequent are inflammatory, remittent, intermittent, and catarrhal fevers, dysentery, and diarrhœa. Most of the diseases require active treatment at the onset.

The barracks are built on the ridge, about thirty yards from the summit-level, and on the Sabine valley side of the ridge; their position is on a line ranging a very little from east and west, and facing nearly north and south. The buildings are probably more exposed to the northeast and southwest winds, but are so situated as to receive breezes from all points of the compass. The new barracks were commenced in 1837, and finished about two months since. There being four companies, each company has two large rooms, 50 feet long by 30 wide; 12 feet high to the ceiling, with a passage of 12 feet between the rooms; porches, or galleries, on

the front and rear, well raised from the ground on stone pillars. Pine is the principal timber used in the construction of the barracks, and consists of large square logs, very neatly fitted together; the ends of the buildings weather-boarded; the sides well protected from the weather by porches 12 feet wide. The buildings are dry and well constructed for ventilation, having eight large windows in each room, four on each side; large doors opening into the passage; the blocks are 20 feet apart.

The hospital is about 60 yards west of the quarters, and nearly parallel to them, on ground a little lower than the site of the barracks, erected in the winter of 1829-'30, and consists of two rooms, 25 by 15 feet, built of pine logs, in a very rough manner; the whole building is in a ruinous and decayed condition, being very ill constructed and badly located; being very near all the buildings appertaining to the quartermaster's department, viz: stables, blacksmith's shops, saw-pits, &c., &c.

No endemic disease has at any time prevailed at the post since its establishment in 1822.

The officers' quarters are old buildings, erected by General Taylor in 1822; they have the same exposure as the barracks.\*

#### MEDICAL TOPOGRAPHY AND DISEASES OF BATON ROUGE BARRACKS.

By Surgeon Benjamin F. Harney : 1840.

Baton Rouge is situated on the east bank of the Mississippi river, in north lat.  $30^{\circ} 36'$ , long. west of Washington  $14^{\circ} 28'$ , and on the first high land or bluff found in ascending the river, and at that point where the artificial embankment or "levee" terminates.

The bluff on which the barracks are situated is about  $22\frac{1}{2}$  feet above high-water, and about 55 or 60 feet above low-water mark. It is about 50 or 60 feet above the level of the Lakes Maurepas and Pontchartrain, which lie in a southeast direction, and are distant, the former 35 or 40, and the latter 45 or 50 miles.

The public grounds are bounded on the north by a bayou, which empties into the river immediately above (175 or 200 yards) the barracks; on the east by private property (lots); on the south by the village of Baton Rouge; and on the west by the river.

The nearest marsh or swamp is a cypress swamp, distant 15 miles north. The bayou forming the north boundary is filled to a greater or less extent from the river, from the 1st of February to the 1st of August of each year.

It might be supposed (and plausibly) that, as the water retired from the bayou, deposits would take place, of such a nature as would be productive of disease. But experience has proven the reverse; for as soon as the annual fall of the Mississippi commences, the "rainy season" also begins, and the bayou is thoroughly washed, and the deposits, that might be a source of disease, are carried by the stream to the river. It also lies in a direction from whence we have *no winds* during the sickly season.

The public grounds are undulating, and well drained; the bayou above mentioned draining them into the Mississippi, and other bayous conveying water from these grounds, the village, and the whole parish, into Lake Maurepas. The country lying on the same side of the river with this station, and north and east, is undulating, and naturally well drained; that lying to the south, together with all west of the river, is formed of a rich alluvial deposit, level, but susceptible of draining by means of "levees," bayous, ditches, &c. There are no mineral productions.

The post has never been furnished with barometer or hygrometer, and but little knowledge can be derived from observations on the thermometer. A few degrees of heat, more or less, being, "*cæteris paribus*," of no consequence.

\* During a portion of the year 1844-'45, troops were assembled at a point about three miles from Natchitoches, and two miles from the immediate banks of Red river. The position was named "Camp Salubrity," being on an elevated sand-ridge, abundantly supplied with excellent spring-water, and surrounded with pine, oak, and hickory woods.—C.



The winds from April to October, inclusive, are *generally* from the south, southwest, and west; and from November to March, inclusive, from southeast, east, and latterly from the northwest. The former winds are from the Gulf of Mexico, and mostly over a prairie country interspersed with woodland, bayous, &c. Winds from an easterly direction, in autumn, produce derangement of the bowels, remittent fever, &c., to a greater or less extent. The sickly season (properly so called) commences about the 1st of August, owing to the causes producing decomposition, &c. The diseases are mostly bilious intermittent, and remittent fever, and tend to a typhoid character. The remedies, for the most part, consist of mercurial cathartics, &c., &c. The liver is in fault in these cases.

The barracks were completed in 1824, and are situated on the bluff on the bank of the river, between the village and the bayou mentioned as forming the north boundary of the public grounds; are constructed of brick, and have slate roofs; all of the best material and good workmanship.

They were originally of pentagonal form; but the building forming the side parallel to the river, and intended for the quartermaster's and commissary's departments, being of bad material, and worse workmanship, has been removed. This, fortunately, leaves open the angle next the river, and affords a finer view and better ventilation than if the original plan had been preserved.

The galleries, fronting inward and outward, are 10 feet in width, and well shaded at all times by china, mulberry trees, &c. These trees were planted in 1824, and are supposed to have contributed in a great degree to the preservation of the health of the garrison since that time. Trees are planted in various parts of the public grounds, particularly in that part between the village and the barracks, and in the ordnance department.

The rooms of the barracks are large, well ventilated, and altogether very comfortable and neat. The hospital is placed about 120 yards southeast of the barracks, fronting east and west, and surrounded by a gallery 10 feet in width. It is airy, and well constructed for ventilation. No endemic disease has ever prevailed here.

The yellow fever was first known here in 1817; then in the years 1819, 1822, and 1827. There were many cases of yellow fever in 1829, but these were confined to the European Spaniards driven from Mexico. These cases were owing to their mode of living, their filth, and to their being much crowded in the buildings they occupied; and, being unacclimated, they were especially obnoxious to disease, and they alone (with only three or four exceptions) suffered therefrom.

The soldiery suffered in 1821 and in 1823, without assignable cause, from a disease called the "cold plague;" during these years the village was free from the disease. It has not been known here since 1823. This disease prevailed in the month of May, and part of June, in each year. The symptoms were *very similar* to those of cholera, and were treated with mercurial cathartics in *very large doses*, warm bath, sinapisms, &c. The causes of general sickness in 1821, 1822, and 1823, were exposure while at work on the barracks (then building), intemperance, and labor in the cypress swamp, some fifteen miles from this, in procuring timber.

#### MEDICAL TOPOGRAPHY OF NEW ORLEANS BARRACKS.

By Surgeon H. L. Hawkins, U. S. A.: 1839. (Extracts.)

The city of New Orleans is situated on the left bank of the Mississippi river, distant 105 miles by the channel from its mouth, and 80 miles in a southeast course. It is 50 miles from the Gulf of Mexico, south; 40 miles from Chandeleur bay, southeast; 15 miles from Lake Borgne, east; and 6 miles from Lake Pontchartrain, north. There are no hills in the vicinity, the city being built on an inclined plane, descending gently from the river to the lakes. When the river is full, the streets are three or four feet below its surface. Inundations are prevented



by a dyke, or levee, which has been made from the Balize to the highlands about Baton Rouge, on the east, and to Point Coupee, 7 miles above Natchez, on the west side of the river. The well-water of the city is not used either for washing or for culinary purposes, as it contains the muriates of lime, magnesia, and soda, and the bi-carbonate of lime, and also iron. Rain and river-water are consequently used by all.

The barracks are situated three and a half miles below the city proper, on the same side of the river. They were erected in 1834 and 1835, and form a parallelogram of about 300 feet on the river, extending back about 900 feet. The quarters, built of granite and brick, are commodious, dry, and well ventilated. They are sheltered from the N. and N.E. winds by a forest of cypress, which, commencing about 500 yards from the river, extends back towards Lake Pontchartrain. The grounds within the parallelogram have been raised thirty inches with earth covered with shells, and, being traversed by ditches, are kept dry.

The S.W. and S.E. winds prevail during the five months from April to August, and the N.E. in September. It is to be remarked that the E.N.E. and S.E. winds come from the Gulf of Mexico, over an immense tract of low swamps, and that the prevalence of N. and E. winds in July, August, and September, is always attended with the epidemic yellow fever. In fact, these three months are the only ones that can be considered as proper seasons of disease—that is, the cause of epidemic yellow fever is produced during those months. Its ravages may, and do, extend into October; but when there has been no epidemic during August and September, strangers are not as liable to disease in October. It has also been remarked, that during an epidemic—for example, in September—if the wind prevails steadily for a few days from the S.W. or W., the disease seems to be checked, fewer new cases occur, and those who are sick recover more readily. If, after this state of things, the wind shifts around again to the N.E., the disease resumes its virulence, cases occur more frequently, and those who are convalescent are suddenly thrown back and frequently succumb. The yellow fever of this climate, then, may be traced to the following combined causes: 1. Low stage of water in the river, leaving its banks, with the deposits brought from the upper country, exposed to the action of the sun; 2. Decomposition of vegetable matter in the swamps in the rear of the city; and, 3. The prevalence of E. and N.E. winds. These winds come not only loaded with miasmata from the swamps which they traverse, but are cold, and tend to produce chills, rendering the system more liable to be impressed with other causes incident to the climate, such as sudden alternations from cold showers to a burning sun. In confirmation of this opinion, it is remarked that a contrary state of things—to wit, high stage of water in the river, and the prevalence of S.W. and W. winds—are not attended with epidemic fever.

#### FORTS PIKE AND WOOD.

Fort Pike is situated on the island of Petites Coquilles, which, as its name imports, seems to have been originally formed of a congeries of small shells, with an admixture of earthy deposit, based upon a substratum of argillaceous earth, rendered black or blue by the oxide of iron. The fort is situated on the northern margin of this alluvial island, which divides Lake Borgne from Lake Pontchartrain, the waters of which communicate by means of the Passes Rigolets and Chef-Mentour. The island, according to Assistant Surgeon De Leon, is about nine miles long, and from two to four miles wide. It is about 34 miles northeast from New Orleans; from 12 to 14 miles north by west from Fort Wood, and 22 miles north from the Mississippi river. The island is intersected with tortuous bayous resembling artificial canals. As their beds are never exposed to solar action, being under the influence of the tides, they are at no time a source of miasmata. The natural elevation of the surface of the island nowhere exceeds two feet. The soil is fertile, being well adapted for the cultivation of vegetables. In the summer, the prevailing wind is from the Gulf of Mexico. This tropical east wind prevails with such constancy,

that the trees on the shores of the lakes and Gulf have acquired an inclination from the sea, supposed to be the effect of its continued action at a period when their growth is most rapid.

Fort Wood is situated on the west side of the Pass Chef-Menteur, the southern boundary of the island of Petites Coquilles. It is surrounded by marshy, low lands, and is under the influence of the immense swamps that skirt the Mississippi.

#### MOUNT VERNON AND AUGUSTA ARSENALS.

Mount Vernon Arsenal, near Mobile river, is about thirty-two miles north of Mobile. The post has a local elevation of about two hundred feet above a small branch of the river, called Coon creek. The position, according to Assistant Surgeon W. E. Fullwood, is most happily chosen; the water is excellent, and it is free from the malarious diseases of the south.

Augusta Arsenal, situated about three miles from the city of Augusta, occupies a high and dry position among the "sand-hills." It is distant about 130 miles from the ocean, and is elevated, it is estimated, about 600 feet above its level. The nearest point of the Savannah river is two miles. The surrounding country presents no marshes or lakes. The locality has an elevation of about two hundred feet above that of Augusta; and, as the soil is hard, dry, and sandy, and the physical aspect of the surrounding country exhibits a succession of hills and sloping valleys, the most favorable natural circumstances obtain to facilitate drainage. The soil is rather unproductive. Culinary vegetables are very inferior in size and quality. Some varieties of fruit, however, such as the apple, plum, peach, and watermelon, are very abundant, attain a large growth, and are finely flavored. The forest-trees consist chiefly of different species of the genera *quercus*, *pinus*, *carya*, *juglans*, and *diospyros*.

#### DISEASES.

The following table, compiled from abstract No. 2 of this division, gives the aggregate amount of sickness and mortality in this region.

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	6,425	3,780	39	588	6
Second quarter.....	6,439	5,406	40	839	6
Third quarter.....	5,583	5,053	91	905	16
Fourth quarter.....	5,228	3,272	84	625	16
Annual ratio.....	5,919	17,511	254	2,958	43
Exclusive of cholera.....		17,426	234	2,944	39.5

It appears from the foregoing data that the average annual number of cases of disease to the number of officers and enlisted men in this region was 2.95 to 1; that the corresponding ratio of deaths was 1 to 23.30, or 4.3 per cent.; and that the proportion of deaths to the number of cases treated was 1 to 68.94, or 1.45 per cent. Exclusive of cholera, the deaths were 1 in 25.29, or 3.9 per cent.



## FEVERS.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength -----	6,425		6,439		5,583		5,228		5,919				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Febris congestiva-----	1	1	0	0	36	5	5	4	42	10	1 in 4	7	
Febris continua communis.---	5	1	9	0	61	0	4	0	79	1	1 in 79	13	
Febris intermittens quotidiana.	212	0	242	0	549	0	283	1	1286	1	1 in 1286	217	
Febris intermittens tertiana.---	407	0	498	0	464	0	264	0	1633	0	0 in 1633	275	
Febris intermittens quartana --	2	0	15	0	33	0	20	0	70	0	0 in 70	12	
Febris remittens -----	43	0	123	1	180	1	86	5	432	7	1 in 61	73	
Febris typhus-----	4	1	2	1	2	1	4	0	12	3	1 in 4	2	
Febris typhus icterodes.-----	0	0	0	0	118	38	74	25	192	63	1 in 3	32	
Total -----	674	3	889	2	1443	45	740	35	3746	85	1 in 44	633	

In reference to this table, and also with regard to the consolidated abstract for this region, it is necessary to remark, that, as a general rule, the troops stationed at New Orleans Barracks are transferred during the sickly season to some point on the shores of the lakes or gulf. Formerly, Pass Christian was the place of summer encampment; but latterly, Greenwood Island, near East Pascagoula. This will account for the small number of cases of yellow fever reported, particularly in 1853 and 1854, when that disease proved so terrible in New Orleans. Most of the cases reported under that head, in those two years, occurred at Baton Rouge Barracks—the small garrison of which was totally prostrated by the disease. In 1853, the troops in the summer encampment at Greenwood Island suffered from this epidemic, an account of which is given in the following letter from Assistant Surgeon Thomas A. McParlin to the Surgeon General, dated Camp Twiggs, East Pascagoula, Mississippi:

“GENERAL: Herewith I have the honor to transmit the report of sick and wounded of this post for the quarter ending September 30, 1853.

During the greater part of this period, the health of the troops in this, their summer quarters, has been remarkably good; and has so continued until lately, when an epidemic fever prevailing has brought many under treatment in the hospital.

During July and August, when fever was desolating New Orleans, (and, in the latter month, our neighboring village of Pascagoula claimed several subjects and victims,) it did not molest us; and it was not until August 20th that any (grave) case of fever occurred in the command.

This may be attributable to our position on the island, (over which the sea-breeze sweeps for the greater part of the day,) and to our having no connexion, by the landing of freight and passengers, with the infected ports of New Orleans and Mobile.

This insular position gives us the advantages of a quarantine, as regards infection on the main land. The men who visit town even, are generally absent for a short time, and are not brought near the sick or their contagion.

As we have comparatively little timber on the island, or near us, the winds from every quarter have free course around us. In this respect, we are contrasted advantageously with our neighbors. A ride for a few hundred yards from their coast leaves you in the depths of a pine wood, where the cool and strong breezes of the coast die away, and give place to sultriness and oppression. There, also, the storm of last year—one of exceeding great violence—had pros-



trated the trees in every direction. These rotting in the stagnant midsummer air, and after an unusually *wet season*,\* if ligneous decomposition be, as some assert, a true morbid cause, contributed most powerfully to the epidemic. This storm brought over the island an inundation from the bay, and left, on its subsidence, a new stratum over the soil.

From the latter part of July, the date of the first cases at East Pascagoula, fever has spread from house to house, in a most plain and evident manner; and, passing to the north, has attacked also persons living some miles in the country, in the pine woods, or near the river. All this, before it crossed over to our quarters on the island.

It has been interesting to trace the steady advance of the fever, and its invasion of house after house, in the regular order of position. A few days after one of the early cases, in a dwelling nearly central in the village, it manifested itself in a resident of the first house on the right; after several cases occurred in this first household, it proceeded to the second on the right; then other cases appeared in the first house on the left. Simultaneously, now, cases were occurring on the right and left; and several members of a household would be seized, especially in dwellings not separated from each other by great distances. Since that time, at longer or shorter intervals, cases have been occurring along the line of buildings on the coast, and in opposite directions. Cases have thus been approaching our island from the main land, until it reached the last house near the bridge dividing us.

I may state here, that the first case of fever in the country was at the distance of three miles from the village, in the person of a lady, yet who had not visited town during, or for weeks preceding, the epidemic. She died of "black vomit;" as did also, a few days thereafter, a female in a neighboring house—distant some hundred yards or more.

In August, I was myself a subject of the disease. From that time, and in September, cases of fever of varying degrees of intensity have been under treatment at the barracks. In the order of invasion, they stand as follows. I give also the "daily mean" of temperature:

MONTHS -----	AUGUST.				SEPTEMBER.									
DATE -----	20.	23.	26.	31.	10.	13.	14.	16.	17.	19.	21.	22.	23.	25.
Temperature, Fah. ---	82°	82.5	85	84.5	80	82.5	86.25	86.75	87.25	82.5	80	71	71	75
No. of cases. -----	1	1	1	1	1	1	1	1	2	2	1	1	2	1

Seizures among the laundresses, and in private families on the island, are not included in the enumeration above.

At the garrison—whether from the lateness of its reaching us, or advantages arising from local position and police—many of the cases have been of a mild type from the first; or, if grave, readily giving way to treatment. The fever is disposed to remit at the expiration of 24 or 36 hours; and, generally declining on the third day, leaves the patient in a state of apyrexia, attended by the most complete prostration and debility. In some cases the remissions have been slight and imperfect, and these are the more severe in their nature.

I report all the cases under "*febris remittens flava*," in the tabular statement, and it includes those of the mild and malignant type. Of the latter, three cases terminated in congestion. I have had no case at the island in which "black vomit" appeared. The three who died were all of the congestive type; two of them relapsing, after 24 or 36 hours of apyretic calm.

All the cases exhibited, in their incursion, the usual symptoms of "yellow fever;" such as I had been made familiar with in the cases occurring earlier in my practice in town. From their evident epidemical character, also, I was disposed to regard them as "yellow remittent fever," (as termed by Dr. Chisholm, in the West Indies, and by Dr. Rush, in our own country,)

\* 10.75 inches of rain fell during the month of July, 1853.

modified and made mild by influences I have before alluded to. In the vitiated air and crowded population of New Orleans, they would doubtless have been more grave.

The cold weather prevailing from the 22d to the 25th ult. aided, if it did not induce, congestive symptoms in the two fatal cases on the 26th and 27th of September. At the same date, a fatal case by congestion occurred in the town of Pascagoula. The weather, indeed, lately, has been unfavorable for those cases exhibiting a tendency to local engorgement and disturbance, gastric or cerebral; inasmuch as the heats of the days are succeeded, soon after nightfall, by cold winds, usually from the north.

The *treatment* I have employed has been chiefly a reliance upon quinine, in large and small doses, at the inception and at the period of expected remission of the fever; and for many valuable suggestions I am indebted to the experience and kindness of Dr. McCormick, U. S. A., at New Orleans.

If the patient were a strong and healthy subject, and the case of a sthenic type, brought to me soon after the rigor, I exhibited 20 grs. of quinine with 30 drops of laudanum. Generally, after the first dose of quinine, a moderate dose of castor-oil was given. If the tongue was very foul, and indications present of bilious disturbance, it was preceded a few hours by a small dose of the submuriate of mercury. If the tongue was of a good appearance, I gave a small dose of oil.

As the patient approached the period of expected remission, (generally at the expiration of 24 or 36 hours,) the quinine was repeated (as above) every two or four hours, until the fever declined. This generally ensued upon a copious and critical diaphoresis, which was by mild means—warm baths and hot pediluvia—induced and kept up. The quinine was generally continued until 60 or 80 grains had been taken. If the fever continued after the period of remission, it was much mitigated, and most of the distressing symptoms would disappear.

On the second day, quinine and laudanum (the latter to moderate the effects of quinine upon the head, and the irritant effect it sometimes manifests in weak stomachs) were again given at the period of remission; and, in some cases, the fever would cease from that time. If it went on to the third day not much abated, or if it had been somewhat of the continued form throughout, (as I have seen in private practice,) it was of grave import, and pernicious symptoms would often soon appear.

Whenever the fever broke, and the stage of calm commenced, soon to eventuate in convalescence or collapse, the state of the stomach had to be watched, and the strength of the patient kept up by gentle stimulation and the use of the blandest aliments—beef, mutton, or chicken-broths, in small quantities, and at short intervals, with especial care not to overtask or offend the stomach.

Nausea and irritability of stomach, or vomiting, were combated by sinapisms to the epigastrium, ice, and cordial tonics. These, if unchecked, and going on to "collapse," required the free use of brandy with water, or as a toddy, iced champagne, with the application of revulsives and califacients to the trunk and extremities.

Lime-water, flaxseed mucilage with lime-juice, iced drinks, pounded ice, lemonade, &c., were very useful in allaying the sense of gastric heat and thirst. For this, also, and the restlessness at night, so common in this fever, I found a concentrated solution of the acetate of ammonia (after a prescription by Dr. McCormick) very excellent in its effects. When I could exhibit it freshly made, the carbonic acid gas was evolved in the draught, and added to its efficacy, as I think. This preparation, with iced champagne, or brandy in different forms, I have given in the stages of "black vomit;" in some cases, with apparent relief and suspension for several hours of this symptom.

I may state here, that I have had the pleasure of having, in private practice, one patient recover after "black vomit" had continued for several hours.

The convalescence from this fever is extremely slow, and some time elapses before the patient



can return to his usual diet. In private practice, some thirty cases of fever have been under my charge, three of whom have died with the "black vomit." In the first case, I was called in late, and this symptom appeared in 12 hours. The patient had been subjected to unusual exposure and fatigue. The second case had come over from New Orleans seventeen days previous to his seizure, and was in daily or frequent receipt of articles from that infected port. The third occurred in the country, after the death of a neighbor with the same disease.

The cases occurring in the command were ordered immediately to the hospital. This early removal of the sick from the sound, gave less scope for local causes in the men's quarters to aid an epidemic in its spread. After removal, every endeavor was made, within the first 24 hours, to procure alleviation or a perfect remission of the disease.

Those who were brought in frequent connexion with the sick, seemed to be more usually the subjects of the disease. I have lost one attendant in the hospital, and the steward is sick whilst I write.

The disease first appeared among the officers who were quartered in town. It next attacked those who sat up with them, or slept there during their sickness. Finally, most of the officers being sick from this cause and others, it attacked those men of the command who came up from the garrison and fulfilled that duty.

The neighboring places of fashionable resort in the summer—Pass Christian, Biloxi, Bay of St. Louis, and latterly Ocean Springs—have all been visited by the epidemic. Indeed, if the line of commerce and travel extends and conveys the epidemic, as it would appear to have done in ascending the Mississippi, it is difficult to expect that, with daily communication with both New Orleans and Mobile in a period of a most diffusive and malignant visitation, even these ordinarily healthful sea-side localities should escape."

#### DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters.....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength .....	6,425		6,439		5,583		5,228		5,919				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Cholera Asiatica.....	4	1	32	9	3	3	46	7	85	20	1 in	4.25	
Diarrhœa.....	372	9	894	1	656	7	343	8	2265	25	1 in	90	382
Dysentery acuta.....	160	3	409	7	244	1	151	1	964	12	1 in	80	162
Dysentery chronica.....	14	2	13	0	22	5	9	4	58	11	1 in	5	9
Enteritis.....	5	1	3	0	17	1	3	1	28	3	1 in	9	4
Hepatitis acuta.....	1	0	7	0	7	0	7	0	22	0	0 in	22	3
Hepatitis chronica.....	5	0	3	0	3	0	2	1	13	1	1 in	13	2
Obstipatio.....	134	0	201	0	126	0	101	0	562	0	0 in	562	95
All other diseases of this system.....	178	2	351	1	248	1	156	0	933	4	1 in	233	157
Total .....	873	18	1913	18	1326	18	818	22	4930	76	1 in	65	833
Exclusive of cholera.....									4845	56	1 in	86	818

Although a comparatively small number of cases of cholera are reported in the above table, it is well known that this disease prevailed to a very great extent in many parts of this region



in 1849 and 1850; and particularly in New Orleans, where it commenced in December, 1848. The following remarks, respecting the nature, symptoms, and treatment of the epidemic cholera, as it prevailed in New Orleans, were communicated to the Surgeon General, by Assistant Surgeon Charles McCormick, who was on duty in that city, and had, therefore, extensive opportunities for studying the disease:

“CHOLERA is characterized by profound disorder in the vital functions, viz: innervation, circulation, and respiration, attended with gastro-intestinal flux, more or less profuse, and a special alteration in the blood and in its circulation.

“Like fever, it has its precursory signs, its premonitory symptoms. There is a sense of general uneasiness (*malaise*); lassitude; want of appetite; giddiness, sometimes amounting to vertigo; headache; dimness of sight; dullness of hearing; griping or colicky pains of the stomach and bowels; a sense of oppression, of weight, of rumbling motions of the intestines.

“In some rare cases, the period of invasion is passed over, and the patient, without any premonitory symptoms, is plunged at once into collapse.

“In a vast majority of cases, however, diarrhoea is the most prominent and extensively recognized *premonitory symptom* of cholera. It comes on suddenly, without the patient having noticed any other of the many deviations from health that may immediately have preceded it. It is a symptom that can scarcely be overlooked, and therefore arrests the attention of the sufferer immediately.

“Epidemic cholera has four distinctly marked stages: 1. Loose dejections; 2. Watery discharges by the stomach, bowels, and skin; 3. Corpse-like coldness, and blueness of the skin, or collapse; 4. Reaction, choleraic fever, an ataxic condition.

“The first consists of a simple looseness of the bowels, the dejections being frequent and more or less copious and thin, the consistence decreasing with each evacuation until it arrives at the next plainly marked stage of the disease—

“The second period. The evacuations now consist of little else than a watery fluid. With these discharges, the thirst is always intense, and the voice begins to fail; the stomach becomes involved, pouring forth the same watery fluid in greater or less abundance; the skin becomes covered with a cold clammy sweat, at times very profuse; and ushered in with this evacuation from the stomach, bowels, and skin, and apparently intimately connected with it, are seen the most *painfully* distressing phenomena of this terrific malady—the cramps and spasms—which cause the patient at times to writhe in agony, giving forth every expression of pain that human torture could provoke.

“The third period follows, and consists of collapse. This seems naturally explained by the waste of the watery portion of the blood, and the great exhaustion of the nervous system, so intimately connected with it, and with the violent cramps and spasms. The voice has become more feeble; the watery evacuations cease; the agony is over, for the spasms have also ceased; and the patient lies indifferent, apathetic, fearless, and craves only drink. The thirst continues intense, becomes insatiable, and seems to exist in a direct ratio to the quantity of watery fluid poured forth by the discharges, and to depend thereon. It seems to arise from an instinctive desire, an urgent demand, to supply the waste and drainage of the system. The whole body shrinks, the features become contracted, pointed, peculiar, (choleraic countenance;) the patient has a cadaverous aspect, the eyes deeply sunken in their sockets, eyeballs rolled upwards or natural, expressing great suffering or total indifference. The skin is as cold as a corpse, clammy and moist, of a blueish hue, varying both in intensity of color and extent of surface it occupies; the hands and feet, particularly, are shrivelled, corrugated, and greatly shrunken, having lost at least one-third of their bulk, and look as if long macerated in water, (like a washerwoman's hands;) the pulse is scarcely discernible, or extinct, and the action of the heart feeble; the air enters the lungs, but respiration is laborious, with a sense of suffocation from the changed condition of the blood, that prevents the full vivifying influence of the air on it; the

spissitude being such that it does not flow in the usual channels, which expose so great a surface to the action of the air throughout the minute and abundant capillaries of the lungs. (Hence, from this *obvious* symptom, the name cholera asphyxia.) The voice, enfeebled and greatly diminished, has become husky and nearly extinct, and the demand it makes is still for cold drinks, iced water. The patient complains of being parched, burning up, and yet the whole surface is icy cold, and possesses an exalted sensibility; sinapisms, blisters, &c., are loudly complained of as burning like fire—insupportable; even the hand of a healthy person, brought in contact with a collapsed cholera patient, I have heard loudly complained of as burning. The tongue is cold, broad, flat, and dry, or mucous and pasty; the abdomen retracted. In short, the whole body has become collapsed, the patient looks more like a corpse than a living being. The blood, changed in its character, deprived of its watery portion, no longer traverses its accustomed rounds, but collects in the heart and veins, especially in the larger trunks, in undue quantity. This change of place, arising from a change in the spissitude of the blood, gives rise in its turn to other changes. There is no arterial blood; there is no secretion, perhaps, except that of bile; for, as before stated, the blood has forsaken the arteries and retreated into the veins.

“Throughout all this frightful havoc of the physical frame, the mind moves calmly, clearly, self-possessed, and begins to feel the destructive influence, or is gone (with but few exceptions) *only* when the brain has ceased to be supplied with aerated blood—only when the individual is *in articulo mortis*.

“The fourth stage occurs when an individual becomes collapsed and lives through it. It is one of reaction—a state of ataxic fever, or, as Sydenham termed it, ataxia spirituum—a nervous disorder; the nervous system not having as yet recovered from the profound shock it has had.

“The chief, constant, and most conspicuous pathological phenomena are seen in the blood. This fluid is fundamentally changed; it is deprived of its watery portion; its density becomes greatly increased; its equilibrium throughout the entire system is destroyed; it accumulates in undue quantities in the right cavity of the heart, in the vena cava, in the portal and emulgent veins; in fact, the whole nervous system is found turgid with this *thick black coagulated* blood; the arteries mostly empty, as also the left side of the heart.

“In twenty bodies examined a short time after death, such was constantly found to be the condition of the blood. It was also found, on placing a quantity of it aside in a vessel until the following morning, coagulated in every instance but one—the whole quantity in the vessel not containing one drop of serum.

“The case mentioned as an exception was that of a woman who had been ill two weeks with typhus fever, took the cholera during the time, and died very shortly after. In her case, on examining the next morning the blood that had been taken from her body and set aside, it was found all fluid, but *very thick and dark*—no sign of *coagulation*, no appearance of serum. In this case it would seem the typhus fever had diminished the fibrin to such an extent that no coagulation took place, and the cholera had robbed the blood of its watery portion. Next in frequency and importance to this changed condition of the blood is the change seen in the bladder; it is empty, no urine in it, perfectly contracted on itself to the size of a black walnut with the hull on. The mucous surfaces all bedewed to a greater or less extent with a fluid strongly resembling the rice-water discharges, and which turns litmus paper red, and is coagulated by nitric acid. The gall-bladder is turgid; the ductus choledochus usually pervious; the liver often engorged, the blood returning from it with difficulty, on account of the obstruction in the central organ of the circulation; the lungs are collapsed, and usually bloodless.

“All the serous membranes are found covered with a tenacious pasty exudation; they are dryer than natural.

“Usually, also, the solitary glands throughout the intestinal canal are very much enlarged, become very distinct and prominent, the surface of the intestines somewhat resembling in rough-



ness a nutmeg-grater. The glands of Peyer also become, in most cases, exceedingly conspicuous and distinct.

"The brain and spinal chord, pancreas, kidneys, and spleen, healthy; the latter looking shrivelled and corrugated.

"The mucous membrane of the stomach and bowels offered at times widely different appearances. It was seen, in some cases, intensely inflamed; in others, white and anemic.

"Such, then, are the phenomena of this terrific malady, and such the fatal devastations it makes upon the human frame.

"To call nothing cholera but collapse and its approach, would be on a par with disclaiming all cases to be yellow fever, unless attended with hemorrhage, or black vomit,—conditions nearly, if not quite, as dangerous as collapse.

"It may be as difficult to diagnose simple diarrhœa from the loose dejections that form the first stage of cholera, as to diagnose remittent from yellow fever. In both cases, when we know the epidemic exists, it influences us very much in deciding all doubtful cases. In my opinion, diarrhœa is as much the first stage of cholera as a chill is of intermittent fever.

"There is no disease milder in its first attack—none more frightful and fatal if neglected. Like a hay-rick on fire, at its first outset a grasp of the hand may extinguish it—neglected a few moments, destruction is inevitable.

"*Treatment.*—It is always of great, and sometimes even of vital importance, that the patient should be in bed. If this precept is duly attended to in the first stage, very often a simple dose of laudanum, in a little brandy and water, or a table-spoonful of paregoric, or a dose of seven or eight grains of camphor in a tea-spoonful of Hoffman's anodyne, joined with prudence in diet, will prove all sufficient; but this should be trusted to only in slight attacks.

"I have usually commenced, in ordinary cases, by giving one of the following pills after each loose evacuation, viz: *R*—Calomel 3 ss.; pulv: opii grs. vj. *M* ft: pil: No. vj.

"In this way, in the course of a few hours, you will probably have given twenty grains of calomel and four grains of opium, which, in ordinary cases, will generally prove sufficient; and even in most severe cases, you will have administered as much calomel as will be necessary.

"When this has proved sufficient, the evacuations will have become far less frequent, and changed in character, especially in consistence. In this early stage, the danger is greater the more frequent and the thinner or more liquid and watery the stools may become. You can continue, therefore, to give one of the calomel and opium pills after each evacuation, if of *this character*, until the whole six are taken; and, if the passages still continue, it becomes necessary to continue the opium, as follows: *R*—Pulv: camph: grs. xij, pulv: opii grs. vj. *M*. ft: pil: vj; giving one of the pills after each evacuation. Rest in bed, fomentations or flaxseed poultices applied to the abdomen, and mustard plasters and warm mustard foot-baths, prove also highly beneficial.

"When the attack is sudden and severe, give ʒj of calomel, and from three to four grains of opium at one dose—and even, if very urgent, as much as six or eight grains of opium.

"In all cases, when the disease comes on *suddenly* and *violently*, or progresses *rapidly*, it becomes the practitioner to adopt a vigorous course of treatment, for the second stage supervenes rapidly; in all such dangerous cases, the nervous derangement is *intense*, as also the irritation of the mucous membrane of the alimentary canal. At all hazards, this gastro-intestinal flux must be arrested; the special alteration that is about taking place in the blood must, if possible, be stopped; for, as it progresses, the patient's danger becomes imminent—every watery evacuation adding to his peril.

"The remedies that I have found most potent for the second stage, with the *rice-water discharges*, are the various preparations of opium, camphor, Hoffman's anodyne, acetate of lead, tannin, brandy, broths seasoned with red pepper, carb: ammoniæ, &c.

"Opium is a remedy of infinite value; in the early stages of this disease, I consider it as nearly indispensable. There has scarcely a prescription been given for this disease in any part of



the world where the disease has prevailed, in which some preparation of opium has not been named as one of its ingredients. The almost universal consent of physicians, in all parts of the world, is in favor of the early administration of opium; I myself have found it of far more value than any other. It can always be safely and beneficially employed by any prudent practitioner.

“Inasmuch as the danger of the disease depends upon the frequency and profuseness of the discharges, I have found it a very safe and good practical rule to direct one grain of opium to be given after each loose evacuation. Thus, in severe cases, the discharges being more frequent, a large quantity of opium is taken in a given time; and it is required, because the irritation is greater.

“There are many cases, however, in which there is no time to lose, and the remedies must be given in as full doses as safe at the first outset. I have given six grains of opium at the first dose, in extremely hazardous cases, and with signal success; in many followed up by the use of camphor and Hoffman’s anodyne, as follows, viz: *R*—Pulv: camphor: ʒj, Hoffman’s anodyne, ʒj. M. A tea-spoonful to be given every half hour or hour, in a little brandy and water. This is a very valuable sedative, and is found to favor the action of opium, and can safely be given, when to give more opium would be imprudent. Opium has a direct tendency to tranquilize and calm the nervous derangement so conspicuous in severe cases, beside, in a great majority of cases, promptly arresting that most dangerous of all the phenomena of cholera—the gastro-intestinal flux. But the moment the watery discharges cease, opium is capable of doing, and has doubtless done, sad mischief; during collapse, its administration is fraught with danger, even in small quantities; and in large, it is eminently perilous and should not be given. It must also be used sparingly, and with great caution, during the ataxic period following collapse.

“I have combined the calomel with the opium, with a view to its laxative effects, and find less costiveness following this treatment than where the calomel has been omitted.

“In the second stage, where the *watery* evacuations set in, I have derived great benefit by combining acetate of lead with the opium, and also from the use of tannin, as before stated. The formula is, viz: *R*—Acet: plumb: ʒj, pulv: opii grs. xij. M. ft: pilul: No. xij., giving one after every watery evacuation, and, if these are copious, oftener, or in larger doses—say two or three pills at a time. Or it may be given by injections, thus, viz: *R*—Acet: plumbi: ʒj, tinct: opii ʒj, water ʒvj. Give one-half as an injection, and repeat if necessary. The use of brandy-toddy, and of beef or chicken-broth, seasoned with salt or red pepper, will be found useful, and should be given the more freely the more severe the attack is.

“Whenever the first stage is severe, and always in the second stage, direct a large blister to be applied over the epigastrium, and give, in addition to the other remedies, viz: *R*—Carb: ammoniæ, pulv: gum: Arabic, āā, ʒij, aqua ʒvj. Next, direct a table-spoonful every fifteen minutes or half hour, as may be necessary, using with it brandy-toddy freely.

“In the collapse, little can be done except to endeavor, by all means in our power, to restore, through the absorbents, the lost serosity of the blood. Give broken ice as freely as it is craved. Give animal broths, seasoned with salt and red pepper; also, brandy-toddy. Most usually, in this condition, but little can be retained in the stomach, and it will, therefore, be found judicious to exhibit them by the rectum—say, to give from one to two table-spoonful of brandy, mixed with four ounces of beef-tea, chicken-broth; &c., and repeat it every hour or two, as it can be retained. I have several times known *good* champagne wine, when properly cooled, by surrounding the bottle with ice, to be retained in the stomach, when no other fluid would be. If we can by any means cause *fluids* to be retained in the stomach or rectum, during the collapse, we give our patient every chance we can of his recovery. It is thus placed in contact with the absorbents, and this is all we can do; it remains for them to act; if they do act, life may be saved, otherwise it cannot.

“The ataxic fever is the condition in which death oftenest occurs. It is extremely dangerous,

and requires judicious treatment and close attention. The main indications are to sustain the system, to supply it freely with nutritious broths, and try by these means, combined with stimulants, such as brandy, champagne, carbonate of ammonia, &c., with camphor and opium, (using the latter with extreme caution,) to prevent exhaustion.

“There is one fact fully established during the late epidemic at the Charity Hospital. It is this: those patients (and there were a great many of them) who passed through the disease without having had any opium given to them at any period of the disorder, passed through the following stages of the disease, and died precisely as those who were treated with opium: died apparently narcotized—comatose. This is readily accounted for, by the circulation of black blood through the brain.”\*

DISEASES OF THE RESPIRATORY SYSTEM.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	6,425		6,439		5,583		5,228		5,919			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica--	31	0	22	0	15	1	16	0	84	1	1 in 84	14
Catarrhus -----	365	0	310	0	300	0	200	0	1175	0	0 in 1175	198
Phthisis pulmonalis-----	8	5	8	7	14	8	13	8	43	28	1 in 1.53	7.2
Pleuritis -----	45	1	35	0	40	0	38	0	158	1	1 in 158	26
Pneumonia -----	22	2	10	0	7	0	7	2	46	4	1 in 11.5	8
All other diseases of this system	5	0	8	1	8	2	9	0	31	3	1 in 10	5
Total. -----	477	8	393	8	384	11	283	10	1537	37	1 in 41	259
Rheumatismus -----	212	0	248	0	194	0	157	0	811	0	0 in 811	137

The epidemic influenza, which has been so frequently noted in this report, made its first appearance at Fort Jesup in the early part of July, 1843, but prevailed more generally in August. At Baton Rouge Barracks that disease prevailed in July and August, reaching into September, when it became complicated with the epidemic of yellow fever. Most of the nine fatal cases of yellow fever reported in the third quarter 1843, had been previously sick with epidemic catarrh. At Mount Vernon Arsenal the influenza prevailed in September, there being no cases reported in August.

In closing this summary, it is important to state that, during the war with Mexico, the hospitals at New Orleans and at Baton Rouge were opened for the reception of the sick and wounded from the general hospitals at the immediate seat of war. As it is not the present object to give the medical statistics of that war, the reports from those stations, for the periods when occupied, as above stated, (from October, 1846, to January, 1849,) have been excluded from the consolidated abstract. If time permits, some general statistics of that war will be given as a supplement to this report.

\* In an article published in the New Orleans Medical and Surgical Journal, Dr. McCormick has more fully presented his views respecting the proximate cause and pathology of cholera.—C.



## SOUTH INTERIOR REGION.—No. 2.

THIS region includes that portion of the area of the United States which lies between the Arkansas and Red rivers, on the north and south, and the Mississippi river and the eastern slope of the Rocky Mountains, on the east and west. The military stations are confined to Arkansas, and to the Indian Territories bordering upon, or lying due west from, that State. Fort Smith is the only post in the State of Arkansas; the stations in the Indian Territories are Forts Gibson, Wayne, Towson, Washita, and Arbuckle.

## FORT SMITH.

This station is on the south bank of the Arkansas, at the mouth of the Poteau river, and at the western limit of the State of Arkansas. It is about 330 miles north from the Gulf of Mexico, and has a local elevation of about 70 feet. Lakes and marshes abound in every direction; some of the latter being subject to be inundated by the Arkansas and Poteau rivers. The diseases of this post are similar to those of Fort Gibson, which will be more particularly described.

## MEDICAL TOPOGRAPHY AND DISEASES OF FORT GIBSON.

By Assistant Surgeon R. H. Coolidge.

Fort Gibson is situated on the east bank of the Neosho or Grand river, in the Cherokee Nation, west of Arkansas, latitude  $35^{\circ} 48' 10''$  north, longitude  $95^{\circ} 3' 15''$  west, and about 425 miles north of the Gulf of Mexico, measuring from a point near the mouth of the Sabine river.

The fort stands upon a plain 550 feet above the level of the sea, and about 20 feet above ordinary low-water mark in the Neosho. This plain extends back from the river about 350 yards, where it terminates in a ridge, the commencement of a high rolling prairie, which spreads in an easterly direction to the Menard mountain, distant about three and a half miles. On the north it is terminated immediately at the fort, by the high prairie above alluded to, which here attains an elevation of over 100 feet, and reaches to the bank of the river. On the south and southeast, this plain is continuous with the "river-bottom," of which it is, in fact, a portion, which extends south to the confluence of the Neosho with the Arkansas river, two and a half miles, and thence southeast for five miles, following the Arkansas to the Bayou Menard, a small stream at the base of the Menard mountain. This bottom-land has a river margin of about eight miles; and an average breadth of three miles, the whole of which, except in the immediate vicinity of the fort, is covered with a dense growth of forest-trees and cane, and has within its borders several lakes and lagoons. The whole, not excepting the site of the fort, is subject to overflow, and during the intense heat of summer the lagoons are mostly dried up.

To the southwest lies a similar "bottom," triangular in shape, bounded on the east by the Neosho, on the south by the Arkansas, and on the west by the Verdigris, a river which empties into the Arkansas, one-half mile above the mouth of the Neosho. The width of this "bottom," measuring from the Neosho to the Verdigris, varies from a half to three miles, while its average extent in a line north from the Arkansas is about two miles.

The climate of Fort Gibson is variable; the summers are intensely hot, and the winters, though sometimes mild and pleasant, are occasionally severe, the rivers being frozen so that loaded wagons cross in safety.

The annual average range of the thermometer is  $96^{\circ}$ , in summer rising to  $102^{\circ}$ , and falling in winter to  $+6^{\circ}$ . The extreme average in a period of twenty-seven years is  $123^{\circ}$ ; the maximum being  $116^{\circ}$ , the minimum  $-7^{\circ}$ . The mean temperatures are as follows: spring 61.04, summer 79.41, autumn 61.66, winter 41.13: year 60.81.

The prevailing winds during the summer months are from the S.E. and S.S.E., blowing, in some months, twenty-eight out of thirty days from one of those points. These winds traverse the extensive "bottom" above described, before reaching the fort. Occasionally the wind



changes to the southwest, blowing over the bottom-land lying between the Neosho and Verdigris rivers; and this change is always followed by increased sickness among the infantry, whose barracks are more exposed to this wind than to that from the southeast; while the contrary obtains with the dragoon command, whose quarters, located on the prairie-ridge bordering the great bottom, are more exposed to the miasm wafted by the prevailing wind. As a general rule, the fevers in this command are more severe than those occurring in the infantry, whose barracks, being on the immediate bank of the river, are protected in some measure from the prevailing winds by the elevated prairie-ridge.

The soil is a sandy alluvion, resting upon a substratum of limestone. The water is strongly impregnated with lime.

The majority of the diseases are of malarial origin, and those which chiefly engage the attention of the medical officers are fevers of an intermittent and remittent type.

An examination of the records of the hospital at this station for a period of twenty years has developed the following results; the time, for the purpose of comparison, being divided into two periods of ten years each: the first, from 1829 to 1838; the second, from 1839 to 1848.

During the first decennial period, the aggregate strength of the command was 4,064; and there occurred 4,686 cases of intermittent, and 1,016 cases of remittent fever. Of the former 5, and of the latter 44 were fatal.

In the second decennial period, the aggregate strength of the command was 3,308; and during this period 4,466 cases of intermittent, and 356 cases of remittent fever were reported. Eight cases of each type proved fatal.

The annual average of intermittent fever for the first decennial period is 120 per cent.; for the second, 135 per cent. Of remittent fever, the average for the first period is 25 per cent.; and for the second, 10.7 per cent. The deaths from fevers of *all kinds* for the first ten years were 57; and for the second ten years 18—all of which occurred within the first four years of this period. In the first decennial period, 26 deaths were from phthisis pulmonalis; and in the second, 10 died with that disease.

The total number of deaths from 1829 to 1838, inclusive, is 277; the annual mortality being 6.5 per cent. Excluding the deaths from epidemic cholera (18), homicide, suicide, and submersion, the annual ratio of mortality is reduced to 4.5 per cent.—(*Vide Med. Statistics U. S. A., ed. 1840.*)

In the period embraced in the second abstract, there were 90 deaths, being an annual mortality of 2.8 per cent.

The practice of treating diseases of malarial origin, and particularly of remittent and intermittent fevers, with large doses of quinine, administered not only in the remission and intermission, but in the height of the fever, was introduced at Fort Gibson in the summer of 1843, by Assistant Surgeon Charles McCormick, who, in common with many officers of the medical staff, had previously adopted this treatment in Florida.

It is found that from July 1st, 1843, to June 30th, 1847, a period of four years, during which the hospital was successively in charge of Surgeon Randall, Assistant Surgeon McCormick, and myself, there were 2,252 cases of intermittent reported. Of these, 1,645 were quotidian, 588 tertian, and 19 quartan. Of remittent fever, 105 cases are reported. All these fevers were treated with large doses of quinine, and upon what has been appropriately termed the "abortive method." No case terminated unfavorably.

The total number of deaths during this period is 13: of these, 2 were from delirium tremens, 3 coup de soleil, 1 cerebritis, 2 phthisis pulmonalis, 1 hæmæthorax, 1 pneumonia, 1 icterus, 1 dysentery, and 1 enteritis.

The aggregate mean strength of the command being 944, and the deaths 13, the annual ratio of mortality is 1.3 per cent.—which is 5.2 per cent. less than the annual ratio for the first decennial period, and 4 per cent. less than for the first four years of the second decennial period.

The annual average of intermittent fever for the four years under consideration, is found to

be 238 per cent.—being 118 per cent. higher than the ratio for the first decennial period. The reverse of this, however, obtains with regard to remittent fevers; the average for the four years being 11 per cent., while for the first ten years it is 25 per cent.

In connexion with this unusually large ratio of intermittent fevers, it is proper to state that in January, 1843, the Neosho rose thirty-five feet, overflowing the extensive bottom-lands in the vicinity of the fort; and in May and June, 1844, the whole of these lands were again submerged. The river overflowed its banks so suddenly, that large numbers of cattle were overtaken in the cane-brakes by the water, and drowned. The lower floors of some of the public buildings were covered with water, and it became necessary to remove the commissary and other stores. The extensive gardens of the post, then in full cultivation, were ruined. When the waters subsided, which was not till the lapse of several weeks, so great was the amount of putrefying animal and vegetable matter, that travellers, passing in steamers on the Arkansas, were compelled to enter their rooms and close the doors. According to the testimony of Cherokee and Creek Indians residing near this post, the summers of 1843 and '44 were the most sickly ever known, if we except that of 1834, in which year the ratio of mortality at the post was 21 per cent.!

The fevers occurring among the troops during the summer months are quotidian and remittent. Of the former, very many would become remittent under any other than the "abortive" treatment. That this is not mere conjecture, is shown by the statistics presented in this paper; and further, by the fact that, during the months of September and October, the fevers in the surrounding country are almost universally of a severe bilious remittent type.

So much has been written within the last eight years of the efficacy of the quinine treatment in fever, that it seems a work of supererogation to add to the mass of facts in support of its propriety and success, which have been presented to the profession. A treatise on the diseases of a locality would, however, be so manifestly incomplete without some account of the treatment proper to be adopted for their cure, that the following remarks are deemed necessary:

In the treatment of ordinary intermittents, it was not considered necessary to give the quinine during the paroxysm. In the quotidian, the fever coming on in the morning and subsiding towards evening, it was the practice to prescribe ten grains of the sulphate of quinine at bedtime, the dose to be repeated the following morning, about five hours before the expected return of the paroxysm. In a majority of these cases, no preparatory treatment was necessary, unless perhaps a single purgative dose of calomel and rhubarb, to cleanse the primæ viæ, and excite the functions of the liver. The general condition of the patient, and particularly of the organs connected with the digestive system, was always examined; and upon the discovery of any functional derangement, or visceral disease, the proper remedies were administered.

Numerous carefully conducted experiments proved that the above method of using quinine was the most economical and efficacious mode of treating the intermittents at Fort Gibson. As a general rule, twenty grains thus given prevented a recurrence of the paroxysm, which would not be effected with less than thirty grains given in small doses repeated every hour.

The remittents, in some seasons, frequently required the lancet; and it was generally necessary to act upon the liver and intestinal canal, either with an emetic and cathartic, or with the latter alone. Frequently, however, patients have been admitted with high fever, intense headache, full, frequent pulse, dry and intensely hot skin, to whom, in preference to bleeding, (though to all appearance absolutely required,) a full sedative dose of quinine—say fifteen or twenty grains—was given without any preparatory treatment. The effect has uniformly been to lessen, in a remarkable manner, the force and frequency of the pulse, alleviate or entirely remove the headache, and bathe the body in profuse perspiration. The same effects would be produced by venesection, affusion of cold water, diaphoretics, &c.: but the fever thus temporarily allayed would return, perhaps, with increased violence, and, with alternate remissions and exacerbations, continue for weeks, perhaps become typhoid, and prove ultimately fatal; while, with the sedative quinine treatment, there is produced so full and perfect a remission of the



febrile symptoms, that if the remedy is repeated at intervals of four or six hours for two, or at most three periods, the disease vanishes, and the patient, instead of feeling as if he had been sick, is able to resume the laborious duties of a soldier by the third or fourth day from the attack.

That the above is no mere fancy of the writer, could be demonstrated from the official records, did time and space permit. It may, however, be briefly stated, that in the summer of 1844 the supply of quinine was exhausted, a quantity intended for the post having been lost by the sinking of a boat in the Arkansas. Every method of treating intermittents and remittents was tried, nevertheless the number of beds in the hospital had to be doubled; many of the fevers assumed a typhoid type; and several would have proved fatal but for the employment of quinine, a small quantity of which, obtained from a private source, was reserved for the most severe cases. In a short time after a full supply of quinine had been received, the extra beds were no longer required, the occupants having returned to duty.

It was ascertained, from a record of some hundred cases, that intermittents were liable to return at intervals of seven, fourteen, twenty-one, and twenty-eight days. The period of recurrence having been ascertained, the patient was required to take twenty grains of quinine in two doses—one twelve, and the other six hours before the expected paroxysm. In every case unaccompanied with organic disease, this treatment was successful, effecting a permanent cure.

In fevers occurring in pregnant women, the quinine was given more freely than in ordinary cases, it being deemed important to prevent a return of the paroxysm, in order to prevent abortion or miscarriage—a result never caused by the use of quinine.

It is not, however, only in the fevers at this post that this remedy is useful. It is equally necessary to the successful treatment of dysentery, cholera infantum, and pneumonia. It is not pretended that quinine will cure all of the above diseases, or that, in places free from malarial influences, it is necessary; it is recommended, because all persons residing at Fort Gibson (and the same must obtain in places similarly situated) must receive the poison malaria, which usually exhibits itself in the series of symptoms we call intermittent and remittent fevers; sometimes, however, from peculiar idiosyncrasy, or unusual vigor of constitution, its presence remains unknown and unnoticed, till from some accidental cause there is a departure from health; then this poison exercises a powerful influence over whatever disease exists, and no disease accompanied with fever can be satisfactorily treated at this post, unless the practitioner recognizes the existence of this poison, and applies its antidote.

As regards the mooted question, whether or not diseases of the organs connected with the digestive system, and dropsies, have been more frequent since the practice of using large doses of quinine became general in the army? the records of Fort Gibson give the following results: In the first decennial period, with a command having an aggregate strength of 4,064, there occurred 3,255 cases of diseases of the digestive organs, and 56 of dropsies. In the second period, with an aggregate command of 3,308, only 1,486 cases of the former and 9 of the latter are reported.

The most fatal disease occurring in the vicinity of Fort Gibson, and also in the State of Arkansas, is that called, in the language of the country, "winter fever." The principal mortality among the Cherokee and Creek Indians is from this disease. It usually attacks persons enfeebled by climate and malarial influences, who live in open houses, are poorly clothed, and, above all, intemperate. No case has occurred, to my knowledge, among the regular troops. The disease is sometimes rapidly fatal, being ushered in with a chill, during which the brain or lungs, or both, become fatally congested, the patient never rallying. In less severe cases, there is usually a chill, followed by fever, complicated with pneumonia, which is not unfrequently double. The disease has a strong tendency to become typhoid, and, if treated as an ordinary pneumonia, is generally fatal. The following extract from my official report for the third quarter, 1845, briefly states my views of the nature and treatment of this disease.

"The disease called 'winter fever' is, in fact, a pneumonia. The attendant fever appears to



be continued, and not to differ from the symptomatic fever attending pneumonitis at the north; but, if closely watched, slight remissions may be observed, even in the severest cases. There appears to be an 'essential fever' with local inflammation. In such cases, my observation teaches me that you may bleed, cup, give mercurial cathartics, and use the tartrate of antimony freely, and still the disease will gain ground. I have closely watched several cases, and, notwithstanding the employment of remedies which, in ordinary pneumonia, would have been successful, I have found the disease steadily advancing both in extent and degree. In this condition, with extensive inflammation of both lungs, I have given the sulphate of quinine in ten and twenty-grain doses, with the happy effect of *removing almost entirely the attendant fever* in less than twenty-four hours, and checking, or at least enabling remedies, before inefficacious, to check the progress of the disease."

In a subsequent report (March, 1847,) the following remarks occur:

"I have had an excellent opportunity this quarter of treating this disease ('winter fever'), in a severe form, among the Arkansas volunteers, and the success of my treatment has corroborated the views expressed in my report for December, 1845.

"The treatment adopted was moderate bleeding, cupping, and external irritants; a mercurial cathartic followed by the nitrous powder of the United States Dispensary, frequently repeated, and quinine given in sufficient doses to check the fever, which it always did.

"The disease had a typhoid tendency, which prevented large bleeding, and rendered the use of serpentaria, senega, and wine necessary in the latter stages.

"Sixteen cases were treated during this quarter, two of which were fatal; of these, one was apoplectic when first seen; the insensibility was never removed, the patient dying in sixty hours. The other was complicated with meningitis, and was under treatment only thirty-six hours."

#### FORT WAYNE.

This post was occupied about three years within the period embraced in this report, having been finally abandoned in the summer of 1842. According to Assistant Surgeon Josiah Simpson, who has furnished a few brief remarks respecting its locality, this post was situated upon a beautiful and elevated plain, in the immediate vicinity of a large prairie, about sixty miles north of Fort Gibson.

#### FORT TOWSON.

This fort is situated in the Choctaw nation, about fifty miles west from the western boundary of the State of Arkansas, six miles northwest of Red river, and the same distance south and east from the Kiamichi. Immediately in the rear of the buildings is an abrupt ravine about eighty feet deep, varying in breadth from a few yards to half a mile, and bounded on the opposite side by rolling hills densely covered with oak and pine. Through it, at the foot of the hill, runs a creek which has its source among the pine hills to the northwest of the fort, and which empties into Red river a short distance below the Kiamichi. This bottom, which is covered with hickory, scrub oak, &c., presents a marshy surface—the obvious source of malarial exhalations. In front of the fort the ground descends gradually for a mile. At this point the prairies commence, and spread out in an undulating manner to a great distance. In the immediate vicinity of the fort, the soil, which is composed of light sand and clay, is not very productive. Upon the prairies, the soil, though superficial, is much richer, based upon a thick stratum of limestone.

#### MEDICAL TOPOGRAPHY OF FORT WASHITA.

By Assistant Surgeon T. C. Madison: 1852.

Fort Washita is located in the Chickasaw district of the Choctaw Nation, west of the State of Arkansas. Latitude  $34^{\circ} 14' 26''$ ; longitude  $19^{\circ} 20'$ . Altitude of the barometer above the sea, 645.0133 feet.

The False Washita river runs within a mile and a half of the post, about 30 miles above its mouth or entrance into Red river, and about 150 feet below the level of the post. Its bottom is not extensive in this vicinity; and if there be any malaria generated therein, the prevailing winds during the summer and autumnal seasons waft it in a different direction.

The post is beautifully situated in a small grove, on the border of an extensive prairie, and is decidedly one of the healthiest positions at present occupied by our troops.

By reference to the hospital register, it appears that there have occurred 3,334 cases of sick and wounded, from the 1st of July, 1842, to the 31st December, 1848, inclusive. During the above period, there were five deaths only—namely, two from remittent fever, one from acute dysentery, one from a gun-shot wound, and the fifth from delirium tremens.

From the 1st January, 1849, up to the present time, no death has occurred, if you except a recruit *en route* for Fort Belknap, who arrived here in a dying condition. During the erection of the present quarters, which are the best I have seen in the army, the men were worked hard, and necessarily much exposed to the solar rays, and, as is usually the case at most new posts, suffered from intermittent fever, which, however, in every instance, was readily curable by the quinine treatment.

The climate may be considered variable. The highest afternoon thermometrical observation during the above period was 107° Fahrenheit, and the lowest, zero. Ice, which is so desirable as a luxury, and almost invaluable as a remedy, can generally be procured during the winter, and preserved throughout the summer. All the wells, springs, and small streams in this vicinity are strongly impregnated with lime, making it desirable to collect rain for purposes of ablution. No case of cholera has ever occurred at this post, or at Fort Towson, though Forts Smith and Gibson have suffered considerably on more than one occasion.

The characteristic geological formations of this region are lime and sandstone. The soil of the high ground is argillaceous, covered with a thick vegetable mould; that of the low land is partly alluvial and very productive. To enumerate all the flowers on our almost boundless prairies would be an endless task, besides requiring a more intimate acquaintance with botany than I possess.

The following are a few of the plants, trees, flowers, and animals in this vicinity:

Silphium laciniatum, or polar or magnetic plant (Indian guide); datura stramonium, or Jamestown weed; digitalis purpurea, or foxglove; aralia nudicaulis, or sarsaparilla; atropa belladonna, or deadly nightshade; podophyllum peltatum, or May-apple; achillea millefolium, or yarrow; æsculus pavia, or yellow buckeye; arum tryphillum, or Indian turnip; allium sativum, or garlic; allium — (species unknown), or wild onion; cactus melocactus, or melon thistle; cactus opuntia, or prickly pear; carya alba, or shag-bark hickory; carya oliviformis, or pecan nut; cercis Canadensis, or red bud; cornus sericea, or red rod; crategus punctata, or common thorn-tree; fragaria Virginiana, or wild strawberry; fraxinus acuminata, or white ash; fraxinus sambucifolia, or black ash; juglans nigra, or black walnut; diospyros Virginiana, or persimmon; serpentaria Virginiana, or snake-root; prunus Virginiana, or wild cherry; morus rubra, or red mulberry; nepeta cataria, or catnip; oxalis acetosella, or wood sorrel; phytolacca decandra, or poke-weed; populus lavigata, or cottonwood; quercus nigra, or black-jack; quercus obtusiloba, or post oak; quercus rubra, or red oak; rubus villosus, or high blackberry; rubus trivealis, or dewberry; ulmus fulva, or slippery elm; verbenæ; vitis vulpina, or winter grape; vitis labruscoides, or fox grape; mimosa, or sensitive plant, (red, yellow, and white); dianthus barbatus, or sweet-william; lobelia cardinalis, or cardinal flower; indigofera tinctoria, or indigo; viola, or violet; viola tricolor, or pansy; humulus lupulus, or hop; helianthus annuus, or sunflower; campanula, or bell-flower; marrubium vulgare, or horehound; bois d'arc, or Osage orange; platanus occidentalis, or sycamore; Chickasaw plum; tanacetum vulgare, or wild tansy; rhus, or sumach; fœniculum, or fennel; sambucus, or elder; coreopsis; heliotropium; menthæ viridis, or spear mint.



*Animals.*—Bear (black), deer (white tail), fox, hare, opossum, otter, skunk, wolf (prairie), raccoon, mouse, rat, rabbit, squirrel (red, grey, and black).

*Birds.*—Bird of Paradise (prairie), blackbird (red-winged), blackbird (rusty), blue-bird, buzzard, crane (sandhill and white), crow, dove, ducks (teal, summer, and mallard), grouse, quail (Virginia partridge), lark, mocking-bird, hawks, owls, martin, plover, red-bird, robin, sparrow, swallow, snipe, sap-sucker, wild goose, woodpecker, wild turkey, whip-poor-will, wild pigeon, yellow-bird, bee-martin, kingfisher.

*Reptiles.*—Lizard, moccasin, rattle-snake, water snake, black snake, viper, tarantulas, scorpions.

*Fishes.*—Buffalo, drum, catfish, eel, gar-fish, trout (not speckled), sucker, sun-fish.

With regard to the Indians in this vicinity—the Choctaws and Chickasaws—they suffer much from scrofula, scurvy, rheumatism, and typhoid pneumonia, or “winter fever.” The majority of them are too lazy to work, and are, consequently, badly clothed and badly fed. Their scrofula is generally hereditary—that is, scrofulous parents generally beget scrofulous children. Their scurvy is owing to their disinclination to engage in agricultural or horticultural pursuits. Very few of the wealthiest, even, hardly ever procure vegetables for consumption during the winter season.

I am inclined to think favorably of the infusion or decoction of the leaves of the black walnut in scrofulous affections. I have tried it in a few cases only; the suggestion was derived from a medical journal. In “winter fever,” I believe the treatment adopted by Assistant Surgeon Coolidge, U. S. A., to be the best.—(*Vide 2d vol. Fenner's Southern Medical Reports.*)

#### MEDICAL TOPOGRAPHY OF FORT ARBUCKLE.

By Assistant Surgeon Rodney Glisan: 1854.

This post is in latitude  $34^{\circ} 27'$  north, longitude  $97^{\circ} 09'$  west, and is situated in a wood, some four miles south of the Washita river, and seventy-six miles north by west of its conjunction with Red river. Immediately west of the garrison is a low timbered bottom, rank in vegetable growth, through which run several small sluggish mountain streams, that dry up during the intense heat of summer.

The prairie beyond the timber (in which the post is located) east and west is undulating, and rises irregularly, southward, swelling into a broken mountain ridge, with an elevation of 400 feet above the river's bed. This mountain is south of the fort, and distant about  $1\frac{1}{2}$  mile; general direction east and west. The only really boggy, marshy lowland lines Wild-horse creek, a tributary of the Washita, and the latter river—the former distant one mile, and the latter four miles, north.

The characteristic geological formations of this country are lime and sandstone. The soil of the high ground is argillaceous, covered with a thick vegetable mould; that of the low land is partly alluvial and very productive. The climate is mild and uniform, but subject to sudden changes of temperature; weather generally fair. The prevailing winds during winter are from the N.; during the spring, S.W. and S.; during the summer, S.; and during the autumn, we have them from the S., the S.E., and S.W. The vernal, summer, and autumnal winds sweep over a dry and elevated region of the country.

As the alluvial low land lies, principally, north of the garrison, and the prevailing winds are from an opposite direction, the miasmatic exhalations of this region are not fully experienced.

The bottom, in our immediate vicinity, is tolerably well drained.

It is ascertained from an examination of the hospital records,\* that each man was on the sick

\* The abstracts of meteorological observations, and of reports of sick and wounded, which formed part of this report, are omitted, in accordance with the general rule.—C.



report 1.3 times per quarter. The principal diseases bear the following ratio to the whole number treated: Intermittent fever, 36; catarrh, 9; dysentery, 4.66; and diarrhœa, 4.03 per centum.

The number of deaths for the last  $2\frac{3}{4}$  years being 5, the annual ratio of mortality per 100 of mean strength is consequently 1.8. Three of the deaths occurred in 1852—two of dysentery and one of typhoid pneumonia; and two in 1853, of dysentery.

The predominant disease during the second and third quarters (of 1851) was intermittent fever. This was generally of a mild type, and in no instance did it assume a malignant form. The great majority of the cases of this complaint in the second quarter were secondary and of foreign origin, occurring originally at the temporary encampment on the Canadian river. The company that came thence, and suffered most, left here at the commencement of the second month in the third quarter. In accordance with a general law pertaining to malaria, that, other things being equal, the lower the position the more intense its action, it has come under my observation, both at the temporary encampment on the Canadian and at this post, that persons occupying raised bunks (say  $2\frac{1}{2}$  or 3 feet) were much less liable to malarious diseases than those sleeping on the ground.

The first disease requiring particular notice in 1852 is scurvy. We had two well-marked cases of this complaint in the first quarter, and there appeared to be a general predisposition to it in the command. But as its cause was clearly to be attributed to the deficient supply in the commissary department of the usual anti-scorbutics—sauer-kraut, dried apples, pickles, &c.—as well as to the scanty issue of very poor and indifferent beef to the troops, its progress was soon checked by correcting these evils, and requiring, in addition, large quantities of wild onions, which were just becoming of a proper size for use, to be issued daily to the men.

Four out of five deaths were from the different varieties of dysentery. But the predominant affections, both in 1852 and 1853, were intermittent and remittent fevers, which were, in many cases, of a very severe grade. These are so universally common in this region, that he who, after a residence here of three years, has escaped unscathed, is looked upon as the most fortunate of mortals. And, indeed, he has some claim to congratulation; for, from the frequency of their recurrence in the same individual, there are, perhaps, no maladies more depressing to our physical and mental energies.

There is scarcely a single day throughout the year in which some one is not ailing with the intermittent fever; but it is, of course, more prevalent in the spring and beginning of autumn, particularly the latter period. About the first of October, it is no unusual occurrence, in a command of 120 men, to have as many as twenty on the sick-report at one time with this complaint.

It is then, also, that remittent fever is so rife. In this climate nearly all diseases are modified by malaria throughout the entire year, but more especially in the autumn. It is this complication that renders diarrhœa and dysentery so exceedingly troublesome to manage. But its baneful influence is more particularly observable in the (so called) winter fever of this region, which is essentially a typhoid pneumonia, complicated with malarious fever. It will be again referred to under the remarks on the diseases of the Indians.

From the fact that the men have had all the mechanical duty to perform at and around the post, in erecting quarters, building bridges, &c., the number of wounds and injuries is unusually large. The majority of the men are foreigners, and the larger proportion of these Germans and Irish, who know nothing of the use of the broad-axe, however expert the former may have been with the broad-sword, or the latter with the spade, in their own country.

*Causes.*—As it regards the severity of the disease, the want of acclimation may be mentioned as one of the most prominent causes. All the above fatal cases occurred in persons not long from a more northern and colder climate; three of them had been here a little more than a year, the other only five or six months—in fact, died during their first summer's residence. The men have been much exposed, ever since the location of this post, in erecting permanent

quarters, and for the greater part of this time both companies were cabined in very indifferent shanties—affording but little protection from inclement weather. One company is still occupying these huts. Exposure, therefore, is another prolific source of the frequency of disease at this post.

Recruits are notorious for being frequently sick; owing, principally, to their not knowing how to adapt themselves properly to the vicissitudes of this climate, where, on account of the extreme sudden changes of temperature, one is required to be constantly on the alert. It may be summer to-day, and winter to-morrow. These changes are more frequent in the last of autumn and the first of spring; though we had a remarkable example on the 15th instant.(?) The whole afternoon was very warm; as night approached, the wind suddenly veered from south to northwest; and by sunrise the following morning the thermometer had fallen to 15°; being 61° lower than at 3 P. M. of the preceding day. Sudden changes of temperature, then, may be noted as one of the greatest of exciting causes. The character of the diseases shows that malaria also has been very active. Independent of its own legitimate diseases, (if the expression is allowable,) we must look to it alone for an explanation of the greater prevalence of dysentery than diarrhœa. For if we leave out the excess of this disease in the second quarter of 1853, which is ascribable to the unusual exposure of the subjects of it to cold and moisture, they having been daily up to their waists in water while engaged in bridging Wild Horse creek, we will have a regular increase of it as the fever season advances. It was not, however, merely a regular numerical increase, but a progressive intensity of grade and miasmatic complication. It is, therefore, fair to conclude that many of the cases of dysentery, especially in September and October, would have been simple diarrhœa, had not the influence of malaria been conjoined to the usual causes of this complaint. It would be impossible to select a place in this whole section of country free from this poison. Our position is generally considered a healthy one; and will doubtless prove so after the bottom in our immediate vicinity shall have been divested of its superabundant vegetable growth, the dead timber and other obstructions removed from its water-courses, and good quarters furnished for the troops. The clearing already done around the garrison, instead of rendering it more salubrious, has probably made it less so—attributable to the large timber having been mostly felled for building purposes, leaving the dense vegetable growth only the more subject to decomposition from a greater amount of solar heat conjoined to its previous moisture—the elements in all countries for the generation of malaria. It is only in a state of semi-cultivation that the proper conditions are obtained for the production of this poison to its fullest extent. For it is notorious that in all new settlements, in thickly timbered regions where miasmatic fevers prevail, they are more prevalent in the second and third years than in the first, or than they ever become afterwards.

*Treatment.*—The scorbutic cases were easily managed by giving a strong solution of citric acid frequently during the day, preceded by a mild saline cathartic when there was much constipation; and the free use of wild onions, together with eggs and fresh meat, as a diet. It was entirely too early in the season for garden vegetables of any kind.

I am disposed to ascribe the beneficial results almost entirely to the wild onions. For the patients improved very slowly, if at all, under the citric acid alone, which was soon exhausted, and did not show decided symptoms of convalescence until the use of the wild onions commenced.

I also believe that this vegetable was the chief instrument in preventing a further outbreak of the disease among the troops. That there was a general scorbutic diathesis in the character of nearly all the diseases then prevalent, and that this rapidly disappeared upon the free use of onions, cannot for a moment be doubted. This beneficial change began simultaneously with their use, and even before any other alteration was made in the diet of the men.

Is it not, then, a fair deduction to attribute to them a great, if not the chief, agency in the cure and prevention of this dreadful disease?

I am also informed that this vegetable was very extensively used at Fort Belknap and Phantom Hill in the winter of 1852, and with highly flattering results.



I am aware that its anti-scorbutic virtues are well known, (at least in the army;) but, as its growth is co-extensive with our immense western frontier; and as it so frequently happens, both in military and civil practice in the far west, that the usual officinal therapeutical remedies are not to be obtained; and as this vegetable is to be had in abundance early in the spring, long before garden vegetables and fruits can be gotten, I have deemed it a duty to add my feeble testimony in its favor. Again: although it is a favorite remedy with some surgeons in the army, I am not quite sure that it is at all known in civil practice. It certainly is not in this section of country.

In the treatment of the miasmatic fevers, quinine and the various preparations of cinchona were, of course, mainly relied upon. Quinine was generally administered during the intermission or remission of the febrile paroxysm; but where there was no abatement, or only a slight remission, I did not hesitate to give it, even while the fever was raging most violently. My experience, however, would not justify me in adopting the practice of those who give it indiscriminately during the paroxysm, and in the interval. My usual plan in intermittent fever was, to commence the treatment by giving a solution of sulphate of magnesia and quinine; or a mixture of rhubarb and quinine, if the bowels were costive; or of quinine and opium if they were particularly loose; but when regular, quinine alone. In cold, damp weather, oil of ricini was substituted for the above cathartics; but given before, not with the quinine.

As only well-marked cases are included under the head of remittent fevers, I usually found it necessary to use calomel or blue-mass freely, either separately, or combined with quinine. It was also in this class of affections that venesection was occasionally made use of. But from my knowledge of this disease, as it has prevailed here for the last two and three-quarters years, I should not fancy being compelled, like Gil Blas, to adopt Dr. Sangrado's practice in every instance, nor even in the majority of cases.

Of course, emetics, diaphoretics, etc., were conjoined to the other treatment in the fevers generally. In dysentery, the treatment was varied according to the type and grade of the disease. When highly inflammatory in character, attended with much tenesmus and arterial excitement, more especially if associated with great hepatic or biliary derangement, a large dose of calomel alone, or combined with opium, and assisted by oil, together with venesection, was employed. For the next few days, alterative doses of calomel or blue-mass, conjoined with opium or ex: hyosciamus, were given once, twice, or three times daily; and about every second day a mild cathartic—which was generally castor-oil; but when the fever was high, and the skin hot and dry, rochelle salts. Opium, either alone or in combination, was much employed. Sometimes the mercurial preparations were given frequently, with the view of “touching the gums.”

In the chronic stage of the acute, and in all chronic cases, acet: plumbi was freely administered; but, except in one or two cases, where the stools were very thin, and nearly pure blood, it seemed to afford very little relief, and in many cases aggravated the symptoms. At this stage, alum and other astringents were also employed. Hope's mixture sometimes did service, but as frequently failed. Cups, blisters, fomentations, clysters, were all brought into requisition as occasion required. Owing, however, to the frequent miasmatic complication, quinine became, in many cases, indispensable. This was usually employed in large quantities endermically.

Here end my remarks upon the diseases of the post; now for a few observations concerning those of the surrounding country.

With the exception of some seven or eight families, there are no inhabitants in the neighborhood of this post. The only Indians that temporarily encamp in its vicinity are roaming bands of the Kickapoos, Wichitas, Keechies, and hunting parties of Caddoes, Wacoos, Creeks, Cherokees, Delawares, Chickasaws, and Choctaws. They are almost universally afflicted with the malarious fevers and their effects. I have seldom seen a case of intermittent fever among them



without an enlargement of the spleen. Enlarged and indurated liver, and dropsy, are by no means rare—all attributable to the frequency and long continuance of the disease. Remittent fever is very fatal among them, particularly with the wild and half-civilized tribes.

About three hundred of a renegade band of the Kickapoos, who come under the latter class, encamped in two parties near the garrison in the summer of 1852, and remained there until last spring. According to their custom, they located their villages on high ground, but did not display the same hygienic knowledge in regard to their position from marshes. One party was peculiarly unfortunate in selecting a site directly north of a swampy part of the Washita bottom, which was kept during the whole summer and autumn just sufficiently moistened to make it a perfect hot-bed of malaria. The consequence was, that they were all stricken down with the fever in its most violent form, and a large number died.

During their residence near garrison, they did not fail to observe that there was some more effectual mode of treating this disease known to the whites than they had any knowledge of. Their importunities for my assistance, therefore, were very frequent. But, for the want of an interpreter, they followed my prescriptions so badly that I attended a very few of them.

Perhaps, among all the diseases to which the Indians of this country are subject (smallpox excepted), the winter fever is the most dreadful. It prevails more or less every winter; but, occasionally, from a peculiar combination of meteorological conditions, sweeps them off by hundreds. Its fatality, however, is more owing to the mode of treatment than the disease itself. They absolutely bleed their patients to death. I allude more particularly to the Choctaws and Chickasaws, among whom it raged so fearfully in the winter of 1852. They, in common with all the so-called civilized Indians, adopt the medical practice, as well as other customs of the whites, but are more easily imposed upon by quacks and impostors.

I attended in the winter of 1852 some six or seven cases of this disease, all of whom recovered. I adopted with them the treatment recommended by Dr. Coolidge, U. S. A., as published in Dr. Fenner's Southern Medical Reports of 1851 or 1852, except that the quinine was used in smaller doses, and given by preference in the remission of fever; which was not, however, always practicable. As his report is not at hand, I am not sure but that he also recommends the quinine to be given in the remission. Be this as it may, it is to his accurate description of the disease, and its treatment, that I must refer all those who desire a more intimate acquaintance with the subject.

I shall conclude with an extract from my former report:

"It appears to be a common, but doubtless false opinion, that the average life of the red man (casualties excepted) is greater than that of his white brother. It is true that we see a great many old-looking men among them; but their old age is premature. I believe their longevity is not as great by 10 per centum as that of Anglo-Americans. This is no doubt attributable to their irregular diet, great exposure, ignorance of hygienic and proper therapeutic remedies. In other respects, they have everything favorable to health and physical development. Their mode of life affords them healthy exercise, and simple nutritious diet."

*List of plants.*—*Aralia nudicaulis*, or wild sarsaparilla; *achillea millefolium*, or yarrow; *aesculus pavia*, or yellow buckeye; *arum triphyllum*, or Indian turnip; *allium sativum*, or garlic; *allium* (species unknown), or wild onion; *asclepias*, or milk-weed; *cactus melocactus*, or melon thistle; *C. opuntia*, or prickly pear; *carya alba*, or shag-bark hickory; *C. olivæformis*, or pecan nut; *cercis Canadensis*, or red bud; *cornus sericea*, or red rod; *cratægus punctata*, or common thorn-tree; *diospyros Virginiana*, or persimmon; *fragaria Virginiana*, or wild strawberry; *fraxinus acuminata*, or white ash; *F. sambucifolia*, or black ash; *gymnocladus Canadensis*, or coffee-bean tree; *juglans cinerea*, or butternut; *J. nigra*, or black walnut; *juniperis Virginiana*, or red cedar; *plantanus occidentalis*, or false sycamore; *mentha borealis*, or horse mint; *morus rubra*, or red mulberry; *nepeta cataria*, or catnip; *oxalis asetosella*, or wood-sorrel; *panax quinquefolia*, or ginseng; *phytolacca decandra*, or poke-weed; *populus levigata*, or cotton-

wood; prunus — (species unknown), or prairie plum; quercus nigra, or black-jack; Q. obtusiloba, or post oak; Q. macrocarpa, or over-cup oak; Q. palustris, or pin oak; Q. rubra, or red oak; Q. bannisteri, or scrub-oak; rubus villosus, or high blackberry; R. trivealis, or dewberry; sambucus Canadensis, or black-berried elder; ulmus Americana, or red elm; U. fulva, or slippery elm; verbenas —, (species unknown); vitis vulpina, or frost grape; V. labruscoides, or fox grape; viola —, (species unknown).

*Mammalia*.—Antelope, bats, bear, (black, common), beaver, buffalo (within fifteen miles of here), deer (white tail), deer (black tail), fox (common grey), hare, mouse (common), mustang, otter (common), panther, raccoon, opossum, skunk, squirrel (grey, fox, and black), wild-cat, wolf (large black), wolf (prairie), rat (brown), rabbit.

*Birds*.—Bird of Paradise, blackbird (red-winged), blackbird (rusty), blue-bird, buzzard, crane (sand-hill), crow (corby), dove, dipper, or didapper, ducks (teal, summer, and mallard), eagle, grouse, hawk (prairie), humming-bird, kingfisher, lark (prairie), mocking-bird (English), martin, owl (barn), pewee, plover, partridge, red-bird, robin, raven, sparrow, swallow, snipe, sap-sucker, swan, wild goose, woodpecker, wild turkey, whip-poor-will, wild pigeon, wren, yellow-bird.

*Reptiles*.—Lizard (common), moccasin (water), rattle-snake, water snake, black snake, garter snake, scorpion (so called); also, scorpio occitanus, or true scorpion, viper, turtle (soft-shelled), turtle (fresh water), terrapin (water and land), frog (bull and horned), toad.

*Fishes*.—Buffalo, catfish, eel, gar-fish, perch (black), trout, bass, sucker, silver sides (or fall fish), sun-fish.

## DISEASES.

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	10,195	6,769	53	664	5.2
Second quarter.....	10,990	8,985	53	817	4.8
Third quarter.....	10,326	12,200	107	1,181	10.3
Fourth quarter.....	8,540	7,566	42	886	4.9
Annual ratio.....	10,013	35,520	255	3,547	25.4
Exclusive of cholera.....		35,312	228	3,531	22.7

The mean strength of the forces in this region being 10,013, and the number of cases of sickness reported 35,520, it follows that the relative proportion of cases of disease to officers and men was 3.54 to 1. It also appears, from the foregoing table, that the proportion of deaths to troops was 1 in 39.36, or 2.5 per cent.; and that the proportion of deaths to the number of cases treated was 1 in 139.29, or 0.71 per cent. Exclusive of cholera, the proportion of deaths to the command was 1 in 43.91, or 2.2 per cent.; and to cases treated 1 in 154.88, or 0.64 per cent.



## FEVERS.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength -----	10, 195		10, 990		10, 326		8, 540		10, 013				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Febris congestiva.....	0	0	0	0	9	4	0	3	9	7	7 in	9	0.8
Febris continua communis...	15	1	52	0	48	1	12	0	127	2	1 in	63	12
Febris intermittens quotidiana	1108	0	1430	0	3682	3	2146	1	8366	4	1 in	2091	836
Febris intermittens tertiana	748	0	1116	0	1166	0	1016	0	4046	0	0 in	4046	404
Febris intermittens quartana.	58	0	36	0	40	0	71	0	205	0	0 in	205	20
Febris remittens .....	85	0	197	0	815	10	250	4	1347	14	1 in	96	134
Febris typhus.....	3	2	2	2	10	5	1	0	16	9	1 in	1.8	1.6
Febris typhus icterodes.....	0	0	0	0	4	0	1	0	5	0	0 in	5	0.5
Total .....	2017	3	2833	2	5774	23	3497	8	14121	36	1 in	392	1412

The original quarterly reports are without special notes respecting this class of diseases, except that by Assistant Surgeon Charles McCormick, for the quarter ending September 30, 1844; from which we make the following extracts:\*

"Fever has been the prevailing disease; the quotidian type predominating, according to this report, probably because all the cases admitted and treated on the first attack yield so readily and rapidly to the energetic use of the sulphate of quinine in large doses, that the fever is immediately cut short, and arrested in its progress before it has had time to develop its type. In some cases the soldiers have suffered fever to become developed before admission; and of these, many proved remittent. Among the severest fevers I have met with in the south, a mild form in the commencement has been by no means uncommon—even so slight as a mild form of intermittent. Fevers may assume the congestive (algid) type at the outset, or it may occur at any stage of the disease. Whenever it does occur, it almost always proves fatal in the third congestive paroxysm, unless promptly relieved by large doses of opium and quinine."

"From a scarcity of the sulphate of quinine, I have been compelled, on several occasions, to treat all the cases of fever without it, except those which assumed a severe or dangerous character. The result of all such compulsory trials, even in cases where the acidulated decoction, or cold acidulated infusion, or the bark itself in substance, had been freely administered, has been a confirmation of all my previous experience, viz: that the free administration of the sulphate of quinine is the only safe, judicious, and effectual mode of arresting the progress of fever, and restoring the patient to health, free from the sequelæ that so often followed every other method of management, and which in themselves have always proved more difficult of cure than the malady from which they originated. On every occasion, during this quarter, wherein this powerful remedy was omitted, the fever wards of the hospital were filled with patients, suffering from fever day after day, and daily, in a great majority of cases, increasing in severity, and in nearly every case continuing its course until arrested by quinine, (which really does seem to act

\* Having been on duty with Assistant Surgeon (now Surgeon) McCormick at Fort Gibson at the time this was written, the compiler can add his testimony respecting the crowded condition of the fever-wards; the increasing severity of that class of diseases—intermittents running into high grades of the remittent form, and some becoming typhoid; and also to the almost instantaneous change effected by the use of quinine when a supply was received. In explanation of the deficiency in that article, it is proper to add, that it was caused by the sinking of the steamer having the medical supplies on board.

almost as an antidote). But when that remedy was on hand in quantities sufficient to justify its true and proper use in all cases, two days were sufficient to free the wards from fever, and to change the scene from one of suffering, prostration, and sickness, into one of convalescence and health."

"The chief remedies resorted to as substitutes for quinine were the Peruvian bark, Virginia snake-root, a combination of opium with the tartrate of antimony and potassa, or ipecac, (of which I reported favorably in 1839,) the ferro-cyanuret of iron, in doses of from 5 to 15 or 20 grains three times a day; a combination of opium and sulphate of zinc, and the arsenite of potassa. They proved inefficient in a great majority of cases. The remedies are named in the order in which their comparative efficacy would seem to class them. Fowler's solution signally failed, although I had hoped much from its use. That it was given in quantities sufficient to produce its full effects, was sufficiently evident from its having had a decidedly poisonous effect in one case, and such a tendency in two others."

**ERUPTIVE FEVERS.**—Under this head we have to note 24 cases of rubeola, 4 of which proved fatal. These cases occurred at Fort Smith, in the third quarter, 1846, and were mostly confined to the Arkansas volunteers, who garrisoned that post. During that quarter, however, the command was composed of both regulars and volunteers, and the diseases of both, being embraced in one report, are included in the general abstract. Assistant Surgeon J. H. Bailey reports that the disease was brought to Fort Smith by the volunteers. The disease exhibited a strong tendency to congestion, particularly of the lungs.

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	10, 195		10, 990		10, 326		8, 540		10, 013			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica.....	0	0	23	7	182	18	3	2	208	27	1 in 7.7	----
Diarrhoea.....	356	6	907	2	979	6	502	1	2744	15	1 in 183	274
Dysentery acuta.....	136	1	481	3	448	9	154	5	1219	18	1 in 68	121
Dysentery chronica.....	18	3	30	1	11	1	33	6	92	11	1 in 8+	9
Enteritis.....	5	0	5	1	18	3	7	2	35	6	1 in 6	3
Hepatitis acuta.....	4	0	11	0	7	0	1	0	23	0	0 in 23	2
Hepatitis chronica.....	2	0	3	0	1	0	0	0	6	0	0 in 6	0.5
Obstipatio.....	173	0	332	2	283	0	130	0	918	2	1 in 459	91
All other diseases of this system..	197	2	377	1	342	7	189	1	1105	11	1 in 100	110
Total.....	891	12	2169	17	2271	44	1019	17	6350	90	1 in 70	634
Exclusive of cholera.....									6142	63	1 in 97	614

**CHOLERA ASIATICA.**—The first remark respecting this disease, from the stations now under consideration, occurs in the report of Assistant Surgeon J. H. Bailey, at Fort Smith, for the quarter ending 30th June, 1849, wherein that officer alludes to the prevalence of cholera upon the Arkansas river, and to the arrival of steamers at Fort Smith with that disease on board. Dr. Bailey remarks, that up to the date of his report there had been but "little proclivity to the disease, either among the troops or the inhabitants of the place." Surgeon J. B. Wells, reporting at the same time from Fort Gibson, (120 miles above Fort Smith, by the Arkansas



river,) observes, "the cases of diarrhœa under treatment during the quarter were impressed with the 'constitution of atmosphere,' favoring the development of epidemic cholera." In the next quarter that officer reports 181 cases of cholera—131 in July, and 50 in August. Of the total number 18 died, being in the proportion of 1 to 10. In regard to this disease, Surgeon Wells reports as follows:

"In my report of sick and wounded of 30th June last, I remarked that the cases of diarrhœa under treatment were impressed with the constitution of atmosphere, favoring the development of epidemic cholera. On the night of the 15th of July last (1849), four privates of the 5th infantry were brought into the hospital, in quick succession, collapsed and pulseless, agonizing under spasms, vomiting and purging rice-water-like discharges, algid surface, tongue cold, cyanosis of extremities and face. Death took place in each case in from six to eight hours. Two of the cases had spasmodic or irregular contractions of the muscles for one hour after dissolution. The secretion of urine was entirely suppressed, and none found in the bladder after death. Upon the admission of a *choleraic* patient, if vomiting and purging were present, I immediately exhibited a mixture composed of morphine and aromatic spirits of ammonia in camphor-water; this failing, I gave four drops of creosote in mucilage, which generally composed the stomach. From my observation of this article in chronic diarrhœa in Florida, and reflecting on its strong tendency to coagulate animal juices (albumen), I determined to make trial of it; and the result proved entirely satisfactory. Furthermore, I was pleased to find in the July number of the Medical Examiner, published at Philadelphia, a report of two cases of cholera, by Surgeon C. A. Finley, U. S. A., who makes the following remarks: "Creosote was given to check emesis, and with good effect." The stomach being quieted for the moment, I threw into it  $\mathfrak{D}$  1 of calomel and 10 grs. of camphor, combined. This was repeated, if necessary, in one hour, and then its administration was regulated by the discharges—their frequency and color; if for the former, one-half the dose for each discharge; and as soon as any *color* was perceived in the discharges, that remedy was gradually discontinued; for, with such a discharge, reaction was sure to succeed, recovery to dawn, and convalescence to follow. Quinine was then introduced into the system, to maintain the action of the heart, and aperients to work off the mercury. In cases where the pulse was the merest quiver, internal and external stimulants were freely used, conjoined with the above treatment. The body was covered with hot mustard cataplasms, and the spinal column freely irritated with hot spirits of turpentine."

In March, 1850, Assistant Surgeon J. H. Bailey again notes the fact of occasional cases of cholera, brought in boats to the landing at Fort Smith, and adds that the disease did not spread in town or garrison. This immunity, however, appears to have had its limit, for we find the disease prevailing there in the following spring. From the official report of Acting Assistant Surgeon N. Spring, it appears that on the 31st of May two companies of the 5th infantry arrived at Fort Smith from Corpus Christi, Texas, having the cholera, which had broken out two or three days before their arrival at that post. "The sick (says Dr. Spring) were placed in the hospital, while the troops encamped upon the bank of the river, 150 yards distant therefrom, and two hundred yards from the barracks. No case occurred in the barracks until the night of the 4th of June, when five men were violently seized with the disease. These were rapidly followed by others, of which a few were of a highly aggravated character, but the major part of less intensity and malignancy. The men first attacked belonged to company E, 5th infantry, which occupied large, well-ventilated, and commodious brick quarters, and it was in this company the most violent cases occurred. These men had been at no post, for years, where cholera prevailed. Company F, 7th infantry, were in wooden sheds, adjoining the quarters occupied by the first mentioned company. Among them no deaths occurred; the cases were of a mild type, and readily yielded to prompt treatment. This company had been at Baton Rouge and Jefferson Barracks at a time when cholera prevailed at those posts, and, in both instances, almost entirely escaped its ravages. The fact of the men's being, in a manner, habituated to the presence of the epidemic, had, I have no doubt, and I think the facts bear out the

inference, a decidedly beneficial influence. On the 6th of June companies B and K, of the 5th infantry, were removed into the country, and on the next day company E went to the same encampment. From that time the disease abated within the limits of the post; but few other cases occurred, and but one fatal one. Company F, 7th infantry, cleansed the quarters vacated by company E, of the 5th, and removed into them soon afterwards, without experiencing any ill effects. In connexion with what may be almost termed the escape of company F, 7th infantry, from the cholera, and the mooted question 'Is cholera contagious?' I cite the following fact: Of the attendants who waited on the cholera sick of the post command, about fifteen in number, seven had the disease, of whom two died, and four others barely escaped death."

The treatment is not specially given: in one case, mention is made of bleeding to six ounces, with happy effect. The patient recovered.

Two or three cases occurred in the town on the 9th of June, but no other cases are noted as occurring there until about the 24th of that month, when the disease, having nearly disappeared from the garrison, reappeared among the citizens with increased violence, and at the date of Dr. Spring's report (July 5th) it was still raging.

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	10, 195		10, 990		10, 326		8, 540		10, 013			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica.....	90	2	43	1	23	1	54	0	210	4	1 in 52	20
Catarrhus .....	679	0	460	0	303	1	456	1	1898	2	1 in 949	189
Phthisis pulmonalis.....	7	9	9	9	2	3	2	4	20	25	.....	2
Pleuritis .....	80	1	67	0	51	0	33	0	231	1	1 in 231	23
Pneumonia .....	91	7	37	3	17	2	17	3	162	15	1 in 10.8	16
All other diseases of this system .....	24	0	19	1	14	3	10	0	67	4	1 in 17	6
Total .....	971	19	635	14	410	10	572	8	2588	51	1 in 51	258
Rheumatismus .....	358	1	328	1	258	0	266	0	1210	2	1 in 605	121

In the winter of 1846-'47, pneumonia, of an exceedingly congestive and fatal character, occurred among the Arkansas volunteers stationed at Fort Smith, and also affected the regular force at that station, though in a less degree. The cases occurring among the regulars only, are given in the abstract. The following statement respecting this disease, as it occurred among the volunteers, is taken from the report of Assistant Surgeon J. H. Bailey, for the quarter ending March 31st, 1847:

"The autumn and early part of winter were very mild. The average daily mean of the thermometer in November was 55.03, and in December 46.62. Cold weather set in on the 7th January. Thermometer at 10°. The weather was extremely variable through January, February, and March; the thermometer often varying, from one morning observation to the next, from 10° to 38°. The spring was at least three weeks more backward than usual. A strong disposition to bronchitis and catarrhal affections existed among the troops during the whole of December, but mostly not of a character to excite any apprehension of the fearful epidemic which so speedily followed. After the 7th January, catarrhal affections assumed a more obsti-



nate character. Pneumonitis soon took the place of bronchitis; and whether the patient was seized with bronchitis, diarrhoea, intermittent fever, or any other disease calculated materially to affect the system, lung affection was sure to follow. Pneumonia was often ushered in by a severe chill, from which the patient would sometimes never react; others assumed an actively inflammatory character from the first; but more frequently a depressing influence on the circulatory system was observed throughout the whole course of the disease. Many were seized with pain in the nape of the neck and cerebellum, attended with giddiness, redness of the conjunctivæ, and delirium. These were the worst cases. Others with pain at the extremity of a nerve, speedily following it to its source. In all the various manners of attack, pain in the lungs and difficult respiration soon followed, and, when fatal, the patient died suffocated—the same as those whose lungs were primarily affected. In one case—that of a destitute citizen, which proved fatal—I found the whole surface of the cerebellum intensely inflamed. From all I have seen and heard of this, and other epidemics of a similar character, I am inclined to the belief that the origin of the pneumogastric nerves may be involved, and defective innervation of the lungs a cause of their strong predisposition to disease. At all events, it is certain that depletory treatment is not to be relied on to the same extent that it is in pneumonia of the north, even making due allowances where the disease is engrafted on systems previously under the depressing influence of malarious diseases, and, in all cases, for the debilitating influences of climate. Venesection has been resorted to in all those cases where sufficient reaction and strength of constitution existed to justify resorting to it, and, followed by topical bleeding and blistering, by opium and calomel, doubtless saved a good number of patients; and in some instances, where reaction was not well established, venesection was tried with the happiest effects; but, as a general rule, where the vital powers were low, especially when broken down by excessive use of stimulants, and holding their lives on such feeble tenures as did many of those I had to treat, we must seek for other powerful, prompt, and efficient remedial means than the lancet, or the patient speedily dies suffocated. For, while depressing the circulatory system with the lancet, the lungs are fast filling up, and the vital powers on the wane. Large doses of quinine were of no utility. Small doses seemed in some instances beneficial in bolstering up the patient. Emetics, especially of sulphate of zinc and copper, often gave temporary relief. Calomel was always decidedly beneficial, and opium of more use than all other remedies together.”

The reports from this region frequently allude to a non-syphilitic bubo, which is of common occurrence, more particularly in the commands at Forts Smith and Gibson. Assistant Surgeons Baily, Abadie, and McCormick speak of its persistent and unyielding character. The disease appears to depend upon some obscure affection of the lymphatic system, and to be excited by slight strains and exposure to cold. The treatment most useful, is by iodine and its compounds, externally as well as internally. The disease is known among the people as “the Arkansas groin.” When treated with mercury, as a syphilitic affection, the results are great general emaciation, with suppuration and undermining the skin in every direction—a condition which it is found exceedingly difficult to relieve.

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ABSTRACTS  
OF THE  
PRINCIPAL DISEASES AND DEATHS  
OCCURRING AMONG THE TROOPS  
IN THE  
SOUTHERN DIVISION.

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## REPORT ON THE SICKNESS AND MORTALITY

## No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.		FIRST QUARTER.											
		YEARS .....		1839.	1840.	1841.	1842.	1843.	1844.				
		MEAN STRENGTH .....			48.	48.	97.	438.	445.				
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers.....	Febris continua communis.....												
	Febris intermittens quotidiana.....							1					
	Febris intermittens tertiana.....							17		2			
	Febris intermittens quartana.....							1		4			
	Febris remittens.....							1		1			
	Febris typhus.....					1							
Eruptive fevers.....	Febris typhus interodes.....												
	Erysipelas.....		1										
Diseases of the organs connected with the digestive system.	Rubeola.....					4							
	Cholera Asiatica.....												
	Diarrhoea.....				5	1		2		10			
	Dysentery acuta.....				1			5		4			
	Dysentery chronica.....									1			
	Enteritis.....		1					1					
	Hepatitis acuta.....							2					
	Hepatitis chronica.....												
	Obstipatio.....							4		10			
	All other diseases of this system.....		3		3	4		6		11			
Diseases of the respiratory system.	Bronchitis, acuta et chronica.....												
	Catarrhus.....		4		19	2		79		65			
	Phthisis pulmonalis.....					1							
	Pleuritis.....				1			1		2			
	Pneumonia.....												
Diseases of the brain and nervous system.	All other diseases of this system.....							1					
	Cephalalgia.....							1		4			
	Delirium tremens.....		1		1	1		3		1			
	Epilepsia.....							1					
	Neuralgia.....							1					
Diseases of the urinary and genital organs.	All other diseases of this system.....							1					
	Gonorrhoea.....				6	1		6		1			
	Stricture urethrae.....							1					
	Syphilis primitiva.....							3		3			
	Syphilis consecutiva.....									1			
Diseases of the serous and exhalant vessels.	All other diseases of this class.....				1			2		3			
	Ascites.....												
Diseases of the fibrous & muscular structures.	All other diseases of this class.....												
	Peritonitis.....												
	Podagra.....							1		8			
	Rheumatismus, acutus et chronicus.....							22		3			
Abscesses and ulcers.....	Fistula.....												
	Phlegmon et abscessus.....				2			10		16			
	Fleus.....							7		1			
	Anthrax.....									1			
Wounds and injuries.....	Concussio cerebri.....		2										
	Contusio.....				7	5		12		6			
	Fractura.....		1			2							
	Luxatio.....									1			
	Punctio.....												
	Subluxatio.....							5		5			
	Vulnus meum.....							8		9			
	Vulnus laceratum.....		4							1			
	Vulnus punctum.....							1					
	Vulnus setopunctum.....		1										
Miscellaneous.....	Debilitas.....												
	Ebrietas.....		1					7		1			
	Hæmorrhoids.....							3					
	Hernia.....												
	Morbi cutis.....							1		1			
	Morbi oculi.....							14		10			
	Scorbutus.....												
	All other diseases.....		11					19		25			
Total.....			30		46	22		250		212		1	

## AMONG THE TROOPS AT POSTS IN THE SOUTH ATLANTIC REGION.

FIRST QUARTER.																				AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
402.		151.		21.		49.		179.		82.		242.		402.		91.		77.		2,772.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
					3				6		1				1		1		1	7	
									11			15							5	13	
5		1																	2	53	
5				1								5								16	
				2								2							3	9	
																				1	
																				1	
																				4	
5		3		1		2		9		3		1		6				1		49	
3						1		7		3		2		1		2				29	
								1		2		1	1							5	1
												1								3	
																				2	
11				2		1				1		1								30	
17		1		1				5		2		6		1		2				62	
1								1						5				1		8	
65		10		9		6		10		8		4		5		4		1		291	
								1				1								2	1
2								3												9	
														2						2	
1																				2	
4		2		1				1						1						14	
5		1																1		14	
												1		3						5	
																				1	
		1		2										1						6	1
5		5		2				4				1		4				4		39	
		1		1										1						3	
7		1		1		4		2				5		1						27	
		1								1								1		4	
4								2		1		1		2						16	
										2										2	
																				9	
14		1		3		3		10		2		6		8		2		1		75	
13		1						4		2		13		22		3		7		93	
		6						4				2		6				2		28	
												1		3						5	
														1						3	
10		1		2		1		10		2		3		1		1		4		65	
		1										2	1	3		2				11	1
										1										2	
1						1														2	
5		4								1		2		4		2				28	
8		1						2		1								1		30	
										2		6		3						16	
1										1										3	
								1												2	
				2						1		3								6	
		5										3						5		22	
																				3	
								1												1	
								1						5						8	
4		1												3				1		33	
1								1						1						3	
8		4		2	2			12		3		6		20				2		112	2
205		52		31	2	22		109		40		94	3	114		19		43		1,289	6

## REPORT ON THE SICKNESS AND MORTALITY

No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	SECOND QUARTER.											
	YEARS.....	1839.	1840.	1841.	1842.	1843.	1844.					
	MEAN STRENGTH.....	48.	50.	63.	123.	483.	435.					
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.
Fevers.....	Febri continua communis.....			1		1				24		
	Febri intermittens quotidiana.....	4		1	1	3	12			9		
	Febri intermittens tertiana.....						1			5		
	Febri intermittens quartana.....											
	Febri remittens.....	3					9			1		
Eruptive fevers.....	Febri typhus.....											
	Febri typhus enterodes.....	3	1									
	Erysipelas.....					1				1		
Diseases of the organs connected with the digestive system.	Rubeola.....											
	Cholera Asiatica.....											
	Diarrhoea.....	2	1	8	2	66				37	1	
	Dysentery acuta.....	6	2	18	2	19				13		
	Dysentery chronica.....											
	Enteritis.....					2						
	Hepatitis acuta.....											
Diseases of the respiratory system.	Hepatitis chronica.....											
	Obstipatio.....		1				7			11		
	All other diseases of this system.....		2	7	6	15				25		
	Bronchitis, acuta et chronica.....						1					
	Catarrhus.....	8	1	6	4	31				29		
	Phthisis pulmonalis.....						1					
	Pleuritis.....	2	1		1	3				3		
Diseases of the brain and nervous system.	Pneumonia.....											
	All other diseases of this system.....		2	1		1						
	Cephalalgia.....						1			4		
	Delirium tremens.....			2		1				2		
	Epilepsia.....											
	Neuralgia.....		1			2						
	All other diseases of this system.....					1				1	1	
Diseases of the urinary and genital organs.	Gonorrhœa.....	2		1	1	7				4		
	Stricture urethrae.....			1								
	Syphilis primitiva.....						1			2		
	Syphilis consecutiva.....											
	All other diseases of this class.....									4		
Diseases of the serous and exhalant vessels.	Ascites.....	1										
Diseases of the fibrous & muscular structures.	All other diseases of this class.....											
	Pernio.....											
	Podagra.....					1						
Abscesses and ulcers....	Rheumatismus, acutus et chronicus.....				4	19				8		
	Fistula.....											
	Phlegmon et abscessus.....		3	2	2	3				13		
	Ulcus.....					2				1		
	Ambustio.....											
Wounds and injuries....	Concussio cerebri.....		1	2								
	Contusio.....	3		18	6	18				7		
	Fractura.....	2	1			1						
	Luxatio.....		1									
	Punctio.....											
	Subluxatio.....					4				3		
	Vulnus incisum.....		5		5	8				6		
Miscellaneous.....	Vulnus laceratum.....									2		
	Vulnus punctum.....				2	1				1		
	Vulnus sclopeticum.....					1						
	Debilitas.....					19				25		
	Ebrietas.....				3	2						
	Hamorrhoids.....			1		2				1		
	Hæma.....									1		
	Morbi cutis.....					2				2		
	Morbi oculi.....					35				10		
	Scorbutus.....					2						
Total.....		36	1	28	78	44	326	1	238	2		



## AMONG THE TROOPS AT POSTS IN THE SOUTH ATLANTIC REGION.

SECOND QUARTER.																		AGGREGATE STRENGTH.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.										
422.	141.	292.	87.	151.	69.	230.	138.	70.	73			2,875.							
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.						
		9	4		1	2			1			44							
3	1			1	1	2			1			39							
14	4		1	1	1	5			2			34							
		10										10							
3				2		9		4				31							
		1	2			2						2	1						
												3	1						
1												3							
		8	5									8	5						
23	1	10	15	5	14	2	7	8	1	3		204	2						
10			8	8		4	7	3		1		101							
		1						1	2			4							
							1					2	1						
13	7		4			2		3		2		50							
43	4		8	5	1	3			1	1		121							
				1	1		1	3				7							
38	10	4	13	4	3	4	6	2		2		165							
4	1	2	1									8	1						
1												11							
			2		1							3							
	1	1										5	1						
4	1			2			1					13							
3	3			2			2			1		16							
		1	1	1	3							6							
1	1			3								8							
2	2			1								7	1						
4	1	3	7	3					1	1		35							
	1											2							
1	2			2		2						10							
1												1							
3	2			1		3	1			1		15							
												1							
						1						1							
	1											2							
21	5	1	6	14		1	3			1		83							
			1									1							
7	2		1	11	7	16	2	2		1		72							
3	6					3						15							
	2											2							
												3							
9	3	1		9		3		2				79							
	1					1						6							
								1				2							
1												1							
5	3	2		2	1	1	3		2			26							
5	3	3	4	4			1					44							
				2		3	1					8							
				1								5							
	2											3							
1	1				1							47							
3	2				1	2	1	3	1			18							
	1											5							
2		1										4							
1	1	11		2								19							
6	3		1	3		3	2		1			64							
							1		1			4							
17	4		8	11	3	6		1				92	2						
253	3	92	79	76	1	102	31	86	1	40	23	23	1,575						

## REPORT ON THE SICKNESS AND MORTALITY

No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	THIRD QUARTER.												
	YEARS .....	1839.	1840.	1841.	1842.	1843.	1844.						
	MEAN STRENGTH .....	48.	50.	86.	302.	449.	410.						
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers .....	Febris continua communis .....			1		3	1	2					
	Febris intermitiens quotidiana .....	17	4	2	23	9	1						
	Febris intermitiens tertiana .....	5			19	5		5					
	Febris intermitiens quartana .....				7								
	Febris remittens .....	4	1	1	8	41	3	17					
	Febris typhus .....	1	1			1	1						
Eruptive fevers.....	Febris typhus heterodes.....	3	1										
	Erysipelas.....			1	3								
	Rubeola.....												
	Scarlatina.....	4	1										
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....												
	Diarrhœa.....	2	2	4	30	60	15	1					
	Dysenteria acuta.....	1	1	2	17	25	6						
	Dysenteria chronica.....						5						
	Enteritis.....												
	Hepatitis acuta.....												
	Hepatitis chronica.....						1	1					
	Obstipatio .....				14	10	9						
Diseases of the respiratory system.	All other diseases of this system.....	3	2	9	11	24	66	1					
	Bronchitis, acuta et chronica.....					1	1						
	Catarrhus .....	2	3	6	13	172	24						
	Phthisis pulmonalis.....				1	2							
	Pleuritis.....				1								
	Pneumonia.....												
Diseases of the brain and nervous system.	All other diseases of this system.....						2						
	Cephalalgia.....				4	1	4						
	Delirium tremens.....					2	1						
	Epilepsia.....				1		1						
	Neuralgia .....			1			1						
	All other diseases of this system .....				2		1						
Diseases of the urinary and genital organs.	Gonorrhœa .....	1		6	7	4	5						
	Structura urethræ .....			1	1	1							
	Syphilis primitiva.....			1	4	3	3						
	Syphilis consecutiva.....						1						
Diseases of the serous and exhalant vessels.	All other diseases of this class .....				4	3	2						
	Ascites .....				1			1					
Diseases of the fibrous & muscular structures.	All other diseases of this class.....				3		1						
	Pernio.....												
	Podagra .....												
	Rheumatismus, acutus et chronicus.....			1	9	18	9						
Abscesses and ulcers....	Fistula .....												
	Phlegmon et abscessus.....			1	9	9	13						
	Ulcus .....			2	3		3						
	Ambustio.....				1	1	3						
Wounds and injuries....	Contusio .....	5		6	13	8	10						
	Fractura .....				1		1						
	Luxatio .....		1	1									
	Punctio .....												
	Sub luxatio.....			1		3	6						
	Vulnus incisum.....	4	4		1	15	10						
	Vulnus laceratum.....				1		3						
	Vulnus punctum.....				2	1	1						
Miscellaneous .....	Vulnus sclopeticum.....					1							
	Debilitas .....					2							
	Ebrietas.....				13	4	5						
	Hæmorrhoids .....					3	4						
	Herna .....				1	2							
	Morbi cutis.....				2								
	Morbi oculi.....	1	2	4	6	21	11						
	Scorbutus .....					3	1						
All other diseases.....		6	1	11	38	90	5						
Total .....		59	2	22	62	277	548	6	258	4			

AMONG THE TROOPS IN THE SOUTHERN DIVISION.

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AMONG THE TROOPS AT POSTS IN THE SOUTH ATLANTIC REGION.

THIRD QUARTER.																				AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.		Total cases.	Total died.
289.		154.		160		30.		119.		44.		375.		72.		41.		104.			
Cases	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases	Died.	Cases.	Died.	Cases	Died.	Cases.	Died.	Cases.	Died.		
2												5		2						15	1
5		3				3		6				1								73	1
5		9		6				2		2		3		2				1		61	
		2																		9	
2				17				4		36		5		24				4		161	3
				12																14	2
														1						5	
				1																5	
																				4	1
33		24	1	70		1		12				42		2		4		19		320	2
8								4		1		13								78	
												1								6	
																				1	1
21		12		19				1				4				1		4		95	
24		2		27		1		3				14		2		2		6		196	1
												2					1			4	2
10		6		38		5		3				18		2		2		3		307	
2		1		1								1								8	
		1				1														3	
1												1						1		3	
				1																3	
6		8										3		1						27	
1		2										2						3		11	
		1		5								1								9	
1												1								4	
1		1						2		2	2									9	2
3		1		5		4		2				4						9		51	
																		1		4	
2				2								3						2		20	
3								1				1								6	
1				1								3								14	
				2																3	1
										1		7								12	
6		6		9		2		6				7		1				2		76	
10		6				2		8		7		22		4		2		19		112	
2		2		4				1		1		4						1		23	
2												4								11	
4		5		10		1		10		5		11		2				5		95	
																				2	
								1												3	
												3								3	
5												9				1		1		26	
3		1		28						1		4		1						55	
												2		1						7	
1												1								6	
																				1	
		1						1		1		3		1						9	
3		12								1		3				1		9		51	
1												6		1				2		17	
2										1										6	
3		13				1		3		3						1		5		31	
7								2				6						1		61	
1								1												6	
3		4		4		5		3				17		2		2		3		194	
184		123	1	262		26		77		60	2	240		49		16	1	101		2,362	16



## REPORT ON THE SICKNESS AND MORTALITY

No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	FOURTH QUARTER.											
	YEARS .....	1839.	1840.	1841.	1842.	1843.	1844.					
	MEAN STRENGTH.....	48.				403.	434.	348.				
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	
Fever	Febris continua communis.....	2						1		1		
	Febris intermittens quotidiana.....					10		2		2		
	Febris intermittens tertiana.....					28		6		2		
	Febris intermittens quartana.....							5		10		
	Febris remittens.....					8	1	15		6		
	Febris typhus.....											
Eruptive fevers	Febris typhus icterodes.....											
	Erysipelas.....											
	Rubella.....											
Diseases of the organs connected with the digestive system.	Scarlatina.....											
	Cholera Asiatica.....											
	Diarrhoea.....					33		28	1	6		
	Dysentery acuta.....					15		9		2		
	Dysentery chronica.....											
	Enteritis.....							1				
	Hepatitis acuta.....											
	Hepatitis chronica.....							1				
	Obstipatio.....					13		6		5		
	All other diseases of this system.....	2				12		5		38		
Diseases of the respiratory system.	Bronchitis acuta et chronica.....					3		1		1		
	Catarrhus.....	10				60		44		20		
	Phthisis pulmonalis.....										1	
	Pleuritis.....	3										
	Pneumonia.....										1	
	All other diseases of this system.....					1	1					
Diseases of the brain and nervous system.	Cephalalgia.....					2		4		2		
	Delirium tremens.....					3		2		2		
	Epilepsia.....					1				1		
	Neuralgia.....					3						
	All other diseases of this system.....					2				1		
Diseases of the urinary and genital organs.	Gonorrhoea.....					3				4		
	Structura urethrae.....					1		1		1		
	Syphilis primitiva.....					2		2		1		
	Syphilis consecutiva.....											
Diseases of the serous and exhalant vessels.	All other diseases of this class.....					5		2		2		
	Ascites.....											
Diseases of the fibrous & muscular structures.	All other diseases of this class.....											
	Pernio.....											
Abscesses and ulcers.	Podagra.....											
	Rheumatismus, acutus et chronicus.....	1				18		7		11		
	Fistula.....											
Wounds and injuries.	Phlegmon et abscessus.....					8		13		15		
	Ulcus.....					2		6		2		
	Amblyopia.....											
	Concussio cerebri.....							1				
	Contusio.....					13		16		10		
	Fractura.....					1				2	1	
Miscellaneous.	Luxatio.....					1						
	Sub-luxatio.....					5		4		10		
	Vulnus incisum.....	11				6		2		4		
	Vulnus laceratum.....							1				
	Vulnus punctum.....					2		3		1		
	Vulnus sclopetum.....							1				
Miscellaneous.	Debilitas.....							2		1		
	Ebrietas.....					26		2		2		
	Hæmorrhoids.....							2		1		
	Hæmorrhoids.....					1		1				
	Morbi cutis.....					1				1		
	Morbi oculi.....					9		12		1		
	Scurbutus.....							1				
	All other diseases.....					23		22		3		
Total .....		29				321	2	231	1	176	1	

## AMONG THE TROOPS AT POSTS IN THE SOUTH ATLANTIC REGION.

FOURTH QUARTER.																AGGREGATE SOUTH.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.								
149.	66.	263.	149.	59.	150.	482.	106.	59.	102.							2,818.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
		8						1	1							14	
1		1	1			1		3								21	
4	10	1	6			5	5	3								70	
2																17	
	10	6		1	3	1	4	2	5	1						61	2
		4														4	
							32	4								32	4
8	9	24	14	4	18	1	23	1	1	34						203	2
	2	7	2	3	1		10	3		3						57	
	1				6	1	3	1								10	2
																1	
																1	
5	11	11	1					1	1	24						78	
	4	8	3	2	2	1	3	4	2	1						86	1
			2		1		4	4								16	
17	7	12	4	1	2	17	4	3	11							212	
1		1	1		3	2	2									8	3
1			2													6	
			2		1											4	
1																2	1
	1					2	1	1								13	
						2			1							10	
					1	3	1									7	
	1		2													6	
			1		3			1								8	
2	1	15	9			4	2	4	1							45	
																3	
	2	5	3		1	5			1							22	
								1								1	
	1			2	1	1	1									15	
		2	2	1	2											6	1
						1										1	
4	4	2	7		3	7		5	1							70	
1	3		3	2	1	22	2	2	23							95	
		5	1		3	6		2								27	
																1	
4	1	3	7	3	2	5	1		14							79	
1							1									5	1
			1													2	
1	1		1	1	2	1		1								34	
1	1	7	1		2	2	1									38	
		2	2			10	1	1								17	
		2				4	1									12	1
																1	
		2	1		1	4	1		1							11	2
1					2	1		2	13							49	
1	1	3				1			1							10	
		3														5	
	1				1	3		1	1							9	
					4	5	1									35	
			1	1	3											6	
6	1		1		12	1	19	2	1	5						98	1
64	1	76	134	1	80	1	24	83	1	179	5	65	4	38	142	1,644	21

## REPORT ON THE SICKNESS AND MORTALITY

## No. 2.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.		FIRST QUARTER.															
		YEARS .....		1839.		1840.		1841.		1842.		1843.		1844.			
		MEAN STRENGTH .....		400.		214.		266.		387.		909.		887.			
SPECIFIC DISEASES.		Cases.		Died.		Cases.		Died.		Cases.		Died.		Cases.		Died.	
Fevers.....	Febris congestiva .....														1	1	
	Febris continua communis.....			2	1							1					
	Febris intermittens quotidiana.....	20		2				7			34			36			
	Febris intermittens tertiana.....	40		16		46		72		76			15				
	Febris intermittens quartana.....												1				
Eruptive fevers.....	Febris remittens .....	6				3		1		4		3					
	Febris typhus .....									1							
	Erysipelas.....																
	Rubeola.....																
	Cholera Asiatica.....																
Diseases of the organs connected with the digestive system.	Diarrhoea.....	29	2	21		16		68	2	22		22					
	Dysentery acuta.....	11	1	2		22	1	27		10		33					
	Dysentery chronica.....							6		1	1						
	Enteritis.....	2	1									1					
	Hepatitis acuta .....	1															
Diseases of the respiratory system.	Hepatitis chronica .....									1							
	Obstipatio .....	7		4		8		15		9		18					
	All other diseases of this system ..	19		4		4		6	1	25		28					
	Bronchitis, acuta et chronica.....	2										1					
	Catarrhus .....	53		5		18		19		54		61					
Diseases of the brain and nervous system.	Phthisis pulmonalis.....	2	1			1	1					1					
	Pleuritis.....	6				1		3		3		4					
	Pneumonia.....			2		1				4		1					
	All other diseases of this system.....			1								1					
	Cephalalgia.....	8		5		8				4		10					
Diseases of the urinary and genital organs.	Delirium tremens .....	1		1		2		3	1	4		5					
	Epilepsia.....					1				4		2					
	Neuralgia.....			1				1				1					
	All other diseases of this system.....	1						1		2	1	2					
	Gonorrhoea .....	3		5		6		3		7		4					
Diseases of the serous and exhalant vessels.	Stricture urethrae.....	1															
	Syphilis primitiva.....	1				2				3		4					
	Syphilis consecutiva .....			1						1							
	All other diseases of this class.....			1						4		5					
	Ascites.....																
Abscesses and ulcers....	All other diseases of this class.....	2	1	1				2	1								
	Pernio.....																
	Podagra.....																
	Rheumatismus, acutus et chronicus.....	12		8		12		24		24		31					
	Fistula .....	1						1									
Wounds and injuries....	Phlegmon et abscessus.....	3		5		2		5		18		20					
	Ulcus .....	9		2		4		9		11		8					
	Ambustio.....	3								4		2					
	Concussio cerebri.....			4						1							
	Contusio.....			1		16		22		48		28					
Miscellaneous.....	Fractura .....	2						5									
	Luxatio .....							1		2		1					
	Punctio.....											1					
	Sub luxatio.....	16								13		10					
	Vulnus incisum.....	14		5		10		12		12		11					
Miscellaneous.....	Vulnus laceratum.....											1					
	Vulnus punctum.....									2							
	Vulnus sclopetum.....					1	1	2	1								
	Debilitas.....											2					
	Ebrietas .....	9						12		2		5					
Miscellaneous.....	Hæmorrhoids .....			1		1		1		7		8					
	Hernia .....							4		1		4					
	Morbi cutis.....	1				2		1		2							
	Morbi oculi.....	8		2		13		2		12		12					
	Scorbutus .....	2										1					
All other diseases.....		9		9	1	10		4		20		26	1				
Total.....		304	6	111	2	210	3	339	6	454	2	431	2				



AMONG THE TROOPS IN THE SOUTHERN DIVISION.

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AMONG THE TROOPS AT POSTS IN THE SOUTH INTERIOR—EAST.

FIRST QUARTER.																				AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.		6,425.	
1,634.		262.		229.		143.		262.		124.		208.		294.		142.		64.		6,425.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	1
37	8	.....	30	.....	.....	.....	.....	2	6	.....	8	.....	19	.....	2	.....	1	.....	.....	212	.....
79	16	.....	13	.....	.....	.....	.....	7	3	.....	5	.....	10	.....	8	.....	1	.....	.....	407	.....
1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....
9	.....	.....	5	.....	.....	.....	.....	11	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	43	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	2	.....	.....	.....	.....	.....	.....	.....	4	1
.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....
.....	.....	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	.....
.....	.....	.....	.....	.....	.....	.....	.....	4	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	1
78	11	1	49	1	2	3	6	.....	10	.....	15	.....	15	.....	6	.....	2	.....	.....	372	9
36	1	1	10	.....	.....	.....	3	.....	.....	.....	.....	.....	3	.....	.....	.....	2	.....	.....	160	3
1	4	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	14	2
.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	5	1
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
2	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	.....
46	6	.....	4	.....	1	.....	8	.....	.....	.....	4	.....	1	.....	1	.....	2	.....	.....	134	.....
58	1	7	7	.....	2	.....	6	.....	3	.....	3	.....	3	.....	2	.....	1	.....	.....	178	2
5	2	.....	2	.....	1	.....	2	.....	.....	.....	.....	.....	12	.....	2	.....	2	.....	.....	31	.....
98	11	.....	19	.....	1	.....	11	.....	4	.....	7	.....	1	.....	2	.....	1	.....	.....	365	.....
3	1	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	8	5
11	1	.....	11	.....	.....	.....	.....	.....	.....	.....	1	.....	2	1	1	.....	1	.....	.....	45	1
.....	.....	.....	10	2	.....	.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22	2
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	.....
31	1	.....	.....	.....	.....	.....	3	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	72	.....
30	.....	.....	7	1	.....	.....	2	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	57	2
3	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	.....
1	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	10	.....
1	.....	.....	3	.....	1	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	1
22	7	.....	3	.....	.....	.....	11	.....	6	.....	1	.....	9	.....	2	.....	.....	.....	.....	89	.....
2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....
16	1	.....	4	.....	.....	.....	.....	.....	3	.....	1	.....	1	.....	.....	.....	.....	.....	.....	26	.....
3	1	.....	.....	.....	.....	.....	3	.....	2	.....	2	.....	2	.....	.....	.....	.....	.....	.....	15	.....
8	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	21	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	8	2
.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
58	7	.....	6	.....	3	.....	8	.....	2	.....	3	.....	11	.....	2	.....	1	.....	.....	212	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....
46	3	.....	6	.....	2	.....	6	.....	3	.....	4	.....	10	.....	3	.....	2	.....	.....	138	.....
27	4	.....	10	.....	2	.....	3	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	94	.....
10	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	2	.....	.....	.....	1	.....	.....	23	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	.....
63	3	.....	9	.....	2	.....	4	.....	1	.....	6	.....	10	.....	2	.....	2	.....	.....	217	.....
2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	11	.....
1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	2	.....
19	5	.....	1	.....	.....	.....	3	.....	1	.....	.....	.....	10	.....	2	.....	1	.....	.....	81	.....
16	5	.....	4	.....	.....	.....	3	.....	3	.....	1	.....	3	.....	.....	.....	1	.....	.....	100	.....
1	.....	.....	.....	.....	.....	.....	4	.....	2	.....	1	.....	3	.....	.....	.....	.....	.....	.....	12	.....
6	1	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	12	.....
1	.....	.....	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	2
7	.....	.....	2	.....	.....	.....	.....	.....	3	.....	2	.....	3	.....	.....	.....	.....	.....	.....	22	.....
48	4	.....	7	.....	1	.....	4	.....	2	.....	1	.....	3	.....	.....	.....	3	.....	.....	101	.....
13	3	.....	1	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	37	.....
3	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	.....
8	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	17	.....
23	2	.....	2	.....	.....	.....	2	.....	.....	.....	1	.....	4	.....	.....	.....	1	.....	.....	84	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....
58	9	.....	10	.....	2	.....	9	.....	7	.....	5	.....	14	1	4	.....	1	.....	.....	197	3
993	2	135	1	261	5	22	3	137	1	71	.....	78	2	159	3	47	1	28	.....	3,780	39



AMONG THE TROOPS IN THE SOUTHERN DIVISION.

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AMONG THE TROOPS AT POSTS IN THE SOUTH INTERIOR. -EAST.

SECOND QUARTER.																				AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
1,739.		71.		71.		18.		271.		122.		135.		141.		125.		85.		6,439.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
3								1		2										9	
50	1		11		2		4		1		11		13		15		3			242	
169		5		11			7		4		12		11			8		3		498	
		5													1					15	
23	3						5		6		5									123	1
													1	1			1			2	1
4			2	1			2													9	1
																				10	
																				1	
								32	9											32	9
315	15		8		3		51		4		21		13		13		14			494	1
96	1	2		3			6		7		3	1	7		4		4			409	7
2			2				2				1				2		1			13	
												1					1			3	
2									2											7	
2																				3	
93			7		1		6		2		2		1				7			201	
143		4		2		1	9		10		3		7		2		2	1		351	1
							4						4		1		2			22	
134		2		2					2		3		2					1		310	
1	1										1					1		1		8	7
6					1															35	
4							1		2											10	
2							5													8	1
77							4		1		2		1		1		1			180	
19	2	1		10			5		1						1					70	5
8															1		2			17	
7							1		1				1		1		1			18	
2									1											8	
27		4		3			8		2		2									107	
1											1									5	
11							2		2		1									40	
6							1				1						2			14	
7							1		1						1					25	1
1																				2	1
1																				7	1
91		4		12		2	15		1		5		1				3			218	
3																1		1		6	
66					1		13		3						4		5			155	
26		3		8			4		3				1		1					88	
4					1															17	
							1						1							2	
											1									1	
137	1	1					2		1		3				3					269	1
2			2						1											7	
1							1		1											9	
34							1		2		3		5		1		1			89	
27		1					5		1				4		1					112	
6							3				2									20	
2									1				4				1	1		14	1
2																				5	
11				3			1		4				2		1					31	
66		3		3		2	7		1		4		1		1		1			143	
18		1					3				1						2			50	
12							1						1							26	
14																1				33	
25				1			3		1						1		3			95	
3							1													8	1
90		24		2		2	6		6		6		3		1		1			270	
1,856	5	79		92	1	16		227	9	77		94	1	85	1	70	1	66	3	5,406	40



## REPORT ON THE SICKNESS AND MORTALITY

## No. 2.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	YEARS.....	THIRD QUARTER.											
		1839.	1840.	1841.	1842.	1843.	1844.						
		380.	290.	133.	487.	903.	1,799.						
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers .....	Febris congestiva.....	.....	.....	.....	.....	1	1	27	1	2	1	.....	.....
	Febris continua communis.....	7	.....	.....	.....	.....	.....	.....	.....	45	.....	.....	.....
	Febris intermittens quotidiana.....	20	30	.....	.....	106	81	.....	.....	162	.....	.....	.....
	Febris intermittens tertiana.....	14	19	12	73	27	190	.....	.....	.....	.....	.....	.....
	Febris intermittens quartana.....	.....	1	.....	.....	2	4	.....	.....	.....	.....	.....	.....
	Febris remittens.....	1	16	1	3	36	34	41	.....	.....	.....	.....	.....
	Febris typhus.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Eruptive fevers .....	Febris typhus icterodes.....	7	.....	18	5	.....	20	9	.....	.....	.....	.....	.....
	Erysipelas.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Diseases of the organs connected with the digestive system.	Rubeola.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Cholera Asiatica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Diarrhoea.....	98	27	1	21	72	1	42	1	142	1	.....	.....
	Dysentery acuta.....	40	1	14	17	19	35	58	.....	.....	.....	.....	.....
	Dysentery chronica.....	.....	2	.....	.....	5	3	.....	.....	.....	.....	.....	.....
	Enteritis.....	1	1	.....	.....	.....	2	6	.....	.....	.....	.....	.....
	Hepatitis acuta.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....
Diseases of the respiratory system.	Hepatitis chronica.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....
	Obstipatio.....	.....	3	6	21	13	42	.....	.....	.....	.....	.....	.....
	All other diseases of this system.....	32	21	1	4	21	35	78	.....	.....	.....	.....	.....
	Bronchitis, acuta et chronica.....	.....	.....	1	.....	1	1	5	.....	.....	.....	.....	.....
	Catarrhus.....	25	3	.....	.....	13	190	48	.....	.....	.....	.....	.....
	Phthisis pulmonalis.....	3	1	.....	1	2	1	3	1	2	.....	.....	.....
	Pleuritis.....	4	1	1	.....	.....	7	23	.....	.....	.....	.....	.....
Diseases of the brain and nervous system.	Pneumonia.....	.....	1	.....	.....	1	.....	1	.....	.....	.....	.....	.....
	All other diseases of this system.....	.....	.....	1	1	1	.....	3	.....	.....	.....	.....	.....
	Cephalalgia.....	21	7	3	11	7	55	.....	.....	.....	.....	.....	.....
	Delirium tremens.....	2	2	1	1	.....	1	1	16	.....	.....	.....	.....
	Epilepsia.....	.....	.....	.....	.....	.....	2	1	.....	.....	.....	.....	.....
	Neuralgia.....	.....	.....	.....	.....	.....	3	4	.....	.....	.....	.....	.....
	All other diseases of this system.....	1	.....	.....	.....	.....	3	7	1	.....	.....	.....	.....
Diseases of the urinary and genital organs.	Gonorrhoea.....	2	2	3	6	13	21	.....	.....	.....	.....	.....	.....
	Stricture urethrae.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....
	Syphilis primitiva.....	.....	.....	5	.....	1	10	.....	.....	.....	.....	.....	.....
	Syphilis consecutiva.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Diseases of the serous and exhalent vessels.	All other diseases of this class.....	1	2	.....	.....	2	2	2	.....	.....	.....	.....	.....
	Ascites.....	1	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....
Diseases of the fibrous & muscular structures.	All other diseases of this class.....	.....	.....	.....	2	1	1	.....	.....	.....	.....	.....	.....
	Permo.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Podagra.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Rheumatismus, acutus et chronicus.....	9	12	3	14	32	58	.....	.....	.....	.....	.....	.....
Abscesses and ulcers....	Phlegmon et abscessus.....	26	14	1	39	34	72	.....	.....	.....	.....	.....	.....
	Ulcus.....	10	5	4	10	4	15	.....	.....	.....	.....	.....	.....
	Ambustio.....	1	.....	.....	3	6	14	.....	.....	.....	.....	.....	.....
	Amputatio.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wounds and injuries....	Concussio cerebri.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
	Contusio.....	12	8	2	30	38	1	54	.....	.....	.....	.....	.....
	Fractura.....	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....
	Luxatio.....	.....	.....	.....	1	5	1	.....	.....	.....	.....	.....	.....
	Sub luxatio.....	10	.....	.....	14	4	19	.....	.....	.....	.....	.....	.....
	Vulnus incisum.....	12	6	1	10	5	31	.....	.....	.....	.....	.....	.....
	Vulnus laceratum.....	.....	.....	.....	.....	3	2	.....	.....	.....	.....	.....	.....
	Vulnus punctum.....	.....	.....	.....	.....	2	6	.....	.....	.....	.....	.....	.....
	Vulnus sclopeticum.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
	Debilitas.....	.....	1	2	3	6	22	.....	.....	.....	.....	.....	.....
Miscellaneous .....	Ebrietas.....	22	1	3	.....	9	1	47	.....	.....	.....	.....	.....
	Hemorrhoids.....	1	1	2	4	4	5	.....	.....	.....	.....	.....	.....
	Hernia.....	.....	.....	1	.....	2	2	.....	.....	.....	.....	.....	.....
	Morbi cutis.....	4	4	3	8	2	3	.....	.....	.....	.....	.....	.....
	Morbi oculi.....	7	3	.....	7	14	10	.....	.....	.....	.....	.....	.....
	Scorbutus.....	.....	.....	.....	.....	2	1	.....	.....	.....	.....	.....	.....
	All other diseases.....	5	5	4	1	17	98	.....	.....	.....	.....	.....	.....
Total.....		399	5	209	6	120	8	557	3	756	17	1,438	5

AMONG THE TROOPS IN THE SOUTHERN DIVISION.

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AMONG THE TROOPS AT POSTS IN THE SOUTH INTERIOR—EAST.

THIRD QUARTER.																				AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
413.		200.		102.		133.		206.		140.		99.		130.		90.		78.		5,583.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
												5	1	1	1					36	5
									7						2					61	
51		4		4		9		3		13		18		23		13		12		549	
56		10		6				6		5		17		13		11		5		464	
		9						13							4					33	
4		1						14		16		5		3				3		180	1
														1		1				2	1
																56	14	17	10	118	38
				2		1														4	
																		3	3	3	3
50		48	1	44		12	1	12		12		22	1	24		11		19		656	7
27		4		6				9		3				3		1		8		244	1
		8	3			2		3				1								22	5
						1		1		6										17	1
3										1						1				7	
				1																3	
5		4		2		1		7		5		5		4		3		5		126	
18		9		5		2		7		4		3		3		3		3		242	1
		1		3								3						1		15	1
3		5		3		3				3						2		2		300	
3	1			4																14	8
3										1										40	
1								2		1										7	
3				1																8	2
1		8	1					4		3				1		1		8		130	
15		1		2	2			2		2								1	1	45	5
				7														1		11	
						1		2		1						2				13	
1	1	1						1		2		1				1		2	1	20	3
4		8						3						1		1				64	
																				2	
7		5						1												29	
2								1										1		5	
1		2						2		1				1		2				16	
3																				6	
										1								1		5	1
19		3		23		4		1		5		4				1		3		194	
9		6		2				23		11		6		11		9		14		280	
13		11		6		2		3		6		2		1		2				94	
				1						1		1								27	
				1				1												2	
				12																13	
3		7				1		3		3		1								162	1
				4		1														8	
2																				9	
1		1		1		1		2												53	
8		1										1				1		2		78	
								1		1										7	
		1														1				10	
		1						2	2											4	2
6		14		27		7		3		9		3		2		2				107	
9		6				2		4		2		2		4		1		1		113	1
		1						2		1						1	1			22	1
		1		7				1												14	
		4								2								1		31	
5		4		4		1		1		1				2				1		60	
1		1		1				1								1				8	
30		20		5		3	1	9		10		5		6		2		5		254	2
367	2	210	5	184	2	54	2	153	2	142		105	2	104	1	136	16	119	15	5,053	91

## REPORT ON THE SICKNESS AND MORTALITY

No. 2 ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	FOURTH QUARTER.											
	YEARS.....	1839.	1840.	1841.	1842.	1843.	1844.					
	MEAN STRENGTH.....	308.	187.	119.	824.	843.	1,598.					
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	
Fevers.....	Febris congestiva.....				1	1	4	3				
	Febris continua communis.....		1									
	Febris intermittens quotidiana.....	20	20	6	63	32	92					
	Febris intermittens tertiana.....	13	31	3	46	23	98					
	Febris intermittens quartana.....				6	3	4					
	Febris remittens.....	3	3	1	14	1	21	2	6			
	Febris typhus.....				1	3						
Eruptive fevers.....	Febris typhus interodes.....			1	1	22	10	11	11			
	Erysipelas.....				1					1		
	Rubeola.....											
	Variola.....											
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....											
	Diarrhoea.....	40	1	32	4	42	16	134				
	Dysentery acuta.....	5	32	1	19	32	31	1				
	Dysentery chronica.....	1	1		1	1	2					
	Enteritis.....					1						
	Hepatitis acuta.....	4			1	1						
	Hepatitis chronica.....				1	1	1					
Diseases of the respiratory system.	Obstipatio.....		6	1	13	6	48					
	All other diseases of this system.....	6	12	1	25	21	69					
	Bronchitis, acuta et chronica.....				3	1	1					
	Catarrhus.....	7	28	2	35	22	59					
	Phthisis pulmonalis.....	1	2	1	1	2	3					
	Pleuritis.....	4	2	1	5	5	17					
	Pneumonia.....		1				1	2				
Diseases of the brain and nervous system.	All other diseases of this system.....			2	1		3					
	Cephalalgia.....	4	8	1	5	3	24					
	Delirium tremens.....		2	6	1	3	20					
	Epilepsia.....		1		2	1	1					
	Neuralgia.....	1	1			1						
	All other diseases of this system.....	1	1	3	1	1	2	1	2			
	Gonorrhoea.....	1	2	1	7	16	16					
Diseases of the urinary and genital organs.	Structura urethrae.....				1	1						
	Syphilis primitiva.....		1		2	5	9					
	Syphilis consecutiva.....		1		2	1	7					
	All other diseases of this class.....	1	1		1	1	8					
Diseases of the serous and exhalant vessels.	Ascites.....											
	All other diseases of this class.....	2	1				2					
Diseases of the fibrous & muscular structures.	Pernio.....											
	Rheumatismus, acutus et chronicus.....	10	8	2	14	22	66					
	Fistula.....						2					
Abscesses and ulcers.....	Phlegmon et abscessus.....	2	6	1	31	20	29					
	Ulcus.....	4	4	2	15	7	29					
	Ambustio.....		5		1	1	7					
	Contusio.....	10	11	2	41	25	74					
	Fractura.....		1		1		2	1				
	Luxatio.....		1				2					
	Punctio.....						2					
Wounds and injuries.....	Sub luxatio.....				9	4	20					
	Vulnus incisum.....	10			10	13	33					
	Vulnus laceratum.....					1	4					
	Vulnus punctum.....			1	2	3	1					
	Vulnus sclopeticum.....					2	1					
	Debilitas.....	1	1	1	4	2	4					
	Ebrietas.....	5	1		10	11	65	2				
Miscellaneous.....	Hæmorrhoea.....		1	1	4	4	10					
	Hæma.....		1		3	1	9					
	Morbi cutis.....			1	2		2					
	Morbi oculi.....	4	18		5	10	19					
	Scorbutus.....	2				4						
	All other diseases.....	3	3	1	1	24	17	2	66			
Total.....		165	5	255	45	4	529	15	385	19	1,107	6



## AMONG THE TROOPS AT POSTS IN THE SOUTH INTERIOR—EAST.

FOURTH QUARTER.																			AGGREGATE STRENGTH.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.											
238.	64.	154.	99.	86.	220.	190.	121.	136.	51.										5,228.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
																		5	4	
																		4		
4		3		1		1		8		18		11		4	1			283	1	
8		5				7		12		9		6		1		2		264		
2		1		6		1												20		
4	4	1		1				17		2		2		8	1			86	5	
																		4		
			1	1										4		5	2	74	25	
																		2		
			3	1														3	1	
		1																1		
								43		6	2	1		1				46	7	
11		7		5	4	5	1	1	1	15		14	1	14		2	1	343	8	
14		2								7				1		4		151	1	
1		2		1				1	1					1				9	4	
2	1																	3	1	
								1										7		
																		2	1	
10		3		1		3		3		2				3		1		101		
5		2				1		1		3		6		3		1		156		
1						1				1		4		2		1	1	16		
14		1		4		9		3		5				3		4	4	200		
4	1			1				2		2		1	1					13	8	
1								1		2								38		
				1		2		2										7	2	
3																		9		
			1					1								1		48		
1	1	1				6				2		1				2	3	48	1	
														1				6		
												1						4		
		1		1	1					1	1							13	5	
7		3						1		5		1		2		1		63		
												1						3		
4								1						2				24		
						4		1		2				1				19		
2		1				1		2						2		1		21		
1	1			1						1	1							2	3	
										1		1						7		
1																		1		
10		1		13		4		1		1		1		2			2	157		
		2																4		
4		1		1				1		4		1		1		2	2	106		
3		5				2		2		3				2				78		
		1								4						1		20		
7		3		6		1		1		3		2		1			1	188		
		1						1										6	1	
						1		1		1						3		8		
																		2		
				1		1				5		2		1		3		46		
5				1						2		1		1				81		
						2		2		5		2		1		3		20		
								1										11		
						1												4		
		3		8		2		5		1				2				34		
4		3				1		1		1		1	1	1				106	3	
3		1						1										25		
2		1		1				2										20		
1								2						1				9		
4				2				3		1		1				1		68		
		2																8		
4		8		2		3		5		16		5		1		6	1	165	3	
147	4	70	2	55	9	47	1	45	2	178	6	90	5	62	2	57	2	3,272	84	

## REPORT ON THE SICKNESS AND MORTALITY

## No. 3.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	YEARS.....	FIRST QUARTER.											
		1839.		1840.		1841.		1842.		1843.		1844.	
		MEAN STRENGTH.....		861.		1,551.		777.		558.		956.	
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fevers.....	Febris continua communis.....									2			
	Febris intermittens quotidiana.....	51		180		87		53		29		141	
	Febris intermittens tertiana.....	69		88		105		23		61		94	
	Febris intermittens quartana.....			18		1				4		15	
	Febris remittens.....	1		11		8		7				1	
Eruptive fevers.....	Febris typhus.....			2	2								
	Erysipelas.....	2	1	3						2		1	
	Rubeola.....												
	Scarlatina.....												
	Variceloid.....	2											
Diseases of the organs connected with the digestive system.	Diarrhoea.....	27	1	52	2	15	1	14		30	2	35	
	Dysentery acuta.....	3		34	1	7		5		13		21	
	Dysentery chronica.....	4	1	3				1					
	Enteritis.....												
	Hepatitis acuta.....			1									
Diseases of the respiratory system.	Hepatitis chronica.....												
	Obstipatio.....	6		24		5		4		24		22	
	All other diseases of this system.....	15		23	2	12		9		13		16	
	Bronchitis, acuta et chronica.....	32	1	11		2				2		9	
	Catarrhus.....	28		140		39		69		81		46	
Diseases of the brain and nervous system.	Phthisis pulmonalis.....	1	2	2	2		1					1	
	Pleuritis.....	9	1	14		7		11		6		3	
	Pneumonia.....	9	1	6	2	2		2		3		2	
	All other diseases of this system.....	1		5		2				3		2	
	Cephalalgia.....			3		4		3		2		2	
Diseases of the urinary and genital organs.	Delirium tremens.....			19	1	9				7		8	1
	Epilepsia.....	1		4		2		2		5		6	
	Neuralgia.....	4		6				1		1		1	
	All other diseases of this system.....	7		2	1	1		1	1			9	
	Gonorrhoea.....	16		11		12		11		9		22	
Diseases of the serous and exhalant vessels.	Structura urethrae.....												
	Syphilis primitiva.....	2				2		2		1		1	
	Syphilis consecutiva.....			2						2		2	
	All other diseases of this class.....			1		1		2		2		10	
	Ascites.....		1										
Diseases of the fibrous & muscular structures.	All other diseases of this class.....			3			2					1	
	Perio.....			9		2		1		2			
	Podagra.....											1	
	Rheumatismus, acutus et chronicus.....	29		50	1	21		12		31		57	
	Fistula.....			1									
Abscesses and ulcers.....	Phlegmon et abscessus.....	7		37		22		22		19		19	
	Ulcus.....	17		19		15		7		20		19	
	Ambustio.....			6		3				10		4	
	Concussio cerebri.....							1					
	Contusio.....			52		24		24		28		57	
Wounds and injuries.....	Fractura.....			1						2		1	
	Luxatio.....			2		2						4	
	Punctio.....							1					
	Sub luxatio.....	9		19		3		7		6		6	
	Vulnus incisum.....	29		44		13	1	10		14		19	
Miscellaneous.....	Vulnus laceratum.....											1	
	Vulnus punctum.....							1		5		1	
	Vulnus scilopetrium.....											1	
	Delibitas.....	1				3				1		3	
	Ebrietas.....					1		2		2		12	
Miscellaneous.....	Hæmorrhoids.....	2		3		3		2		3		4	
	Hernia.....	3		2		1				2		1	
	Morbi cutis.....	5		6						1		4	
	Morbi oculi.....	13		20		3		5		17		16	
	Scorbutus.....	4		8		6				1			
All other diseases.....		38		43		41	1	15		25		47	
Total.....		450	9	990	14	486	6	330	1	491	2	749	1

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FIRST QUARTER.																				AGGREGATE STRENGTH.	
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
730.		518.		346.		310.		464.		593.		383.		299.		498.		441.		10,195.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
97	111	47	7	23	70	41	8	66	74	1,108											
91	20	10	14	2	15	45	21	27	63	748											
6			9	1	2				2	58											
1	9	10	18	1	2		3	5	8	85											
				1						3	2										
		1		3	1					13	1										
						2				2											
	1									1											
										2											
30	29	16	2	12	32	12	16	23	11	356	6										
3	7	1	7	1	2	1	2	26	3	136	1										
			2	3	2	1	3		1	18	3										
				5						5											
				2	1					4											
				2						2											
11	13	3	3	9	11	5	14	13	6	173											
10	19	11	7	16	6	3	12	13	12	197	2										
7	10	3	1	8		2	2	1	1	90	2										
63	42	22	10	8	10	15	18	61	27	679											
		1	1	2	1	2				7	9										
7	3			1	2	4	3	8	2	80	1										
		1	28	1	3	1	25	1	2	4											
1	1		2	3		1				24											
3	1		2	1		3	2	2		29											
5	3	1	1	1		1	4	1	3	66	4										
1										21											
1						1	2	8	4	29											
1		3	1	2	1	1		1	1	31	3										
14	13		8	3	8	9	2	3	3	146											
		1		1	1	1		1		4											
2	7		7	10	2	5	2			43											
1			2		3	1	2			15											
9	4		2	3	8	5	2		1	52											
				1	1					1	2										
							2			6	2										
	1		3		3					23											
										1											
36	31		9	4	8	15	12	11	25	7	358	1									
					1						2										
46	29		18	6	15	17	19	5	23	17	314										
11	5		6		1	29	2		1	4	147										
3	3		2		1	2		2	3		39										
1			1		1	1					5										
37	26		27	10	14	17	8	14	22	28	388										
2					4	2	1			1	14										
		1				1		2			12										
	9										10										
4	7		5	5	2	7	3	5	21	4	113										
11	11		7	2	13	20	13	7	14	5	232	1									
	5		7	5	1	4	1	1		1	26										
2	2		3			4	1		</												



## REPORT ON THE SICKNESS AND MORTALITY

No. 3 ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	SECOND QUARTER.											
	YEARS .....	1839.	1840.	1841.	1842.	1843.	1844.					
	MEAN STRENGTH .....	1,217.	1,401.	574.	1,420.	913.	904.					
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	
Fevers .....	Febus continua communis.....	1	6	22								
	Febus intermittens quotidiana.....	151	152	76	81	20	179					
	Febus intermittens tertiana.....		161	79	165	73	139					
	Febus intermittens quartana.....		4	1		4	7					
	Febus remittens.....	6	10	17	11	7	10					
	Febus typhus.....	1	1	1	1							
Eruptive fevers .....	Erysipelas.....		4		17	4						
	Rubeola.....											
	Scarlatina.....											
	Varicella.....											
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....											
	Diarrhoea.....	135	87	54	1	118	1	61	129			
	Dysentery acuta.....	75	1	22	1	23	188	20	46	1		
	Dysentery chronica.....		3			18	1	1				
	Enteritis.....			1	1							
	Hepatitis acuta.....		4		2							
	Hepatitis chronica.....	1				1						
	Obstipatio.....	40	1	46	1	9	63	45	25			
	All other diseases of this system.....	48	40	35	18	1	25		34			
	Bronchitis, acuta et chronica.....	6	1	6	3			4	4			
Diseases of the respiratory system.	Catarrhus.....	40	54	9	122	57	29					
	Phthisis pulmonalis.....	1	2	3	3	4	1	1				
	Pleuritis.....	5	21	3	8	5	2					
	Pneumonia.....	1	1	6	1	4	1	6	5			
	All other diseases of this system.....		2	2			5		2			
	Cephalalgia.....	6	25	10	6	1	3					
Diseases of the brain and nervous system.	Delirium tremens.....	5	7	4		7	3					
	Epilepsia.....	5	6	4	1	3	4					
	Neuralgia.....	3	2			4	1					
	All other diseases of this system.....	6	1	5	1	1	5	11				
	Gonorrhoea.....	9	24	15	8	17	17					
Diseases of the urinary and genital organs.	Stricture urethrae.....	1	1	1								
	Syphilis primitiva.....	4	3	5	3			12				
	Syphilis consecutiva.....		2	2	1	2	2	2				
	All other diseases of this class.....	2	10	11	3	2	8					
Diseases of the serous and exhalant vessels.	Ascites.....											
	All other diseases of this class.....	1	2									
Diseases of the fibrous & muscular structures.	Periton.....	2										
	Podagra.....				1							
Abscesses and ulcers.....	Rheumatismus, acutus et chronicus.....	25	42	21	26	27	47					
	Phlegmon et abscessus.....	5	54	10	22	37	36					
	Ulcus.....	14	21	10	43	12	18					
	Ambustio.....		16	3	1	4	2					
	Amputatio.....		2	1								
Wounds and injuries.....	Concussio cerebri.....						1	1				
	Contusio.....	12	25	16	70	38	72					
	Fractura.....		1		1	3	1					
	Luxatio.....	1	4	1	4	4						
	Sub-luxatio.....	8	8	9		2	6					
	Vulnus incisum.....	29	42	13	20	18	15					
	Vulnus laceratum.....					9	6					
	Vulnus punctum.....		2		2	3	2					
	Vulnus sclopeticum.....			1	2	2	1					
	Debilitas.....	1	2	1	11	4	3					
Miscellaneous.....	Ebrietas.....	1	32	1	12		7	6				
	Hæmorrhoids.....	7	3	3	4		7					
	Hæma.....	4	2	3	1	1	1					
	Morbi cutis.....	13					1					
	Morbi oculi.....	12	32	27	16	18	15					
	Scorbutus.....	7	3	7	2	1	1					
	All other diseases.....	97	2	63	2	48	1	31	33	43		
	Total.....	791	13	1,086	9	574	2	1,101	5	612	2	975

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SECOND QUARTER.																		AGGREGATE STRENGTH.			
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.		1854.			
699.		600.		340.		398.		472.		505.		448.		271.		444.		374.		10,990.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
						9						1		1		8		4		52	
167	138		43	27		40		91		52		10		101		92				1,430	
126	85		8	9		11		28		60		30		66		56				1,116	
6	1		3	6		3				1										36	
6	19		31	23		2				2		8		17		28				197	
								1		1				2						2	2
			1											2						29	
														2						3	
	4													1						1	
																				4	
										23	7									23	7
67	56		20	8		46		23		40		14		20		29				907	2
23	27		8	7		1		15		3		10		10		3				481	3
				5										2		1				50	1
				1		1		1	1											5	1
3						2														11	
																1				3	
20	8		6	5		3		10		9		7		15		21				332	2
30	13		14	19		15		14		17		11		26		18				377	1
1	8		1	1				2				2		5		2				43	1
30	11		12	10		3		10		18		10		31		14				400	
	1	1								1										9	9
9	1					1		2		3		2		3		2				67	
5	3		2	1		2				1						1				35	3
			1			1		1				3		3						19	1
6	5		8			1		2						1		1				75	
4	1	1		1						2				1		1		1		36	1
3			1											1						28	
				1		1		8		4		1		1		1		1		27	
2	1		3							2		1		1		3	1			42	2
20	20		7	2		1		11						2		1				154	
								1												4	
10	12		6	1		2		1													

## REPORT ON THE SICKNESS AND MORTALITY

No. 3. -ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	THIRD QUARTER.											
	YEARS.....	1839.	1840.	1841.	1842.	1843.	1844.					
	MEAN STRENGTH.....	1,375.	1,316.	836.	1,095.	888.	837.					
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.
Fever	Febris congestiva.....	2	2	5	2					1		
	Febris continua communis.....	6	13	9	1	1						
	Febris intermittens quotidian.....	829	2	347	136	150	410			390		
	Febris intermittens tertiana.....			266	77	113	152			113		
	Febris intermittens quartana.....			21			6			5		
	Febris remittens.....	77	3	65	3	97	1	53	1	83	91	1
	Febris typhus.....	2	2	4	2	1						
Eruptive fevers.....	Febris typhus acutodes.....			4								
	Erysipelas.....						1			4		
	Rubeola.....											
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....											
	Diarrhoea.....	213	1	94	3	52	141	2	81		76	
	Dysentery acuta.....	60	1	23	1	26	158	4	17		14	
	Dysentery chronica.....			2	1				1		1	
	Enteritis.....	1	2	4			1		2		1	
	Hepatitis acuta.....	2		4	1							
	Hepatitis chronica.....										1	
	Obstipatio.....	38	25		9	83	22		27			
	All other diseases of this system.....	45	1	31	59	1	16	2	31		25	
	Bronchitis, acuta et chronica.....			3					2		1	
Diseases of the respiratory system.	Catarrhus.....	38	1	20	7	102	50		21			
	Phthisis pulmonalis.....						1		1			
	Pleuritis.....	9	10	8	1	3						
	Pneumonia.....	1	3	1		1	4		3			
	All other diseases of this system.....		3	2	3	1			1			
Diseases of the brain and nervous system.	Cephalalgia.....	14	15	5	8	18			1			
	Delirium tremens.....	3	14	1	2	11	1	4				
	Epilepsia.....	6	6	1		2			1			
	Neuridia.....	5			2							
	All other diseases of this system.....	4	1	1	3	4			13			
Diseases of the urinary and genital organs.	Gonorrhoea.....	18	13	22	12	22			19			
	Stricture urethrae.....											
	Syphilis primitiva.....	5		2	2	3			9			
	Syphilis consecutiva.....		3			1			6			
Diseases of the serous and exhalant vessels.	All other diseases of this class.....	1	1	4	1	5			11			
	Ascites.....											
Diseases of the fibrous & muscular structures.	Permo.....	1			3							
	Podagra.....											
	Rheumatismus, acutus et chronicus.....	27	36	18	32	22			45			
Abscesses and ulcers.....	Phlegmon et abscessus.....	47	66	21	28	50			58			
	Ulcus.....	36	20	13	48	14			32			
	Ambustio.....		3	2	3	1			2			
Wounds and injuries.....	Concussio cerebri.....											
	Contusio.....	22	36	27	41	51			50			
	Fractura.....			2					1			
	Luxatio.....	2	2	1	1							
	Punctio.....					4						
	Subluxatio.....		8	6	3	4			4			
	Vulnus incisum.....	52	1	13	26	1	13		18		14	
	Vulnus laceratum.....										10	
	Vulnus punctum.....		4		3	3			2			
	Vulnus sclopetum.....			3	1	1			1	1		
Miscellaneous.....	Debilitas.....	15	6	16	12	3						
	Eclampsia.....	3	1	10	20	1	4		34		27	
	Hæmorrhoids.....	3	3	4							2	
	Hernia.....	5	1	1	3	1						
	Morbi cutis.....	9		2		7						
	Morbic oculi.....	20	39	25	25	19			11			
	Scorbutus.....	4	1		5							
	All other diseases.....	171	2	129	42	104	1	66		54		
Total.....		1,797	24	1,374	13	763	10	1,173	12	1,230	2	1,167



## AMONG THE TROOPS AT POSTS IN THE SOUTH INTERIOR—WEST.

THIRD QUARTER.																		AGGREGATE STRENGTH.	
1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.										
640.	568.	313.	180.	459.	380.	397.	292.	409.	341.									10,326.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
				5				1										9	4
								3		5		3	1					48	1
291	216	1	74	33	115	114	119	142	245	71								3,682	3
96	39		12	4	32	36	32	64	109	21								1,166	
2	1		2		1					2								40	
45	1	39	77	14	1	33	16	40	61	21								815	10
	3	1																10	5
																		4	
	3								1									9	
	24	4																24	4
					181	18	1											182	18
39	35		41	26	69	25	31	4	35	17								979	6
11	1	57	10	1	9	1	11	13	12	1	19	7						448	9
			1	1			1	1	1	2								11	1
					9				1									18	3
																		7	
																		1	
9	12		2	5	6	10	5	6	14	10								283	
25	1	21	2	10		23	4	12	13	17	9							342	7
	12									4	1	1						23	1
15	6		2	2		1	8	13	16	2								303	1
	1	1		1														2	3
2			1		2		3	2	6	4								51	
1	2			2						1								17	2
1	1			1	1			1	1	1								14	3
7			1		1	5	4	1	1									81	
2			3	1	1			1	1									42	3
1					1	3												21	
			1	1	3	8	1	1	1	3								26	
2	2		1		1		1		5	1	1	1						36	6
16	12			3	3	2	2	1	3	1								149	
1	1																	2	
17	6		1	2	2	1	4	1										55	
7			1	1	1	2		1										23	
4			5	3	3	4		5	1	4								52	
	1	1																	
																		7	2
					1		2											4	
24	5		4	3	10	9	6	2	6	9								258	
59	16		15	1	29	51	21	12	1	44	62							583	1
2	16		10	2	13	11	3	2	2	5								229	
1					2		1	1	5	1								22	
			1	1														1	1
19	16		20	6	10	6	24	6	24	23								381	
	2					2			1									8	
1	2																	10	
					1				1									6	
14	7		2		3	9	1	2	12	14								29	
12	6		6	3	9	10	15	4	8	10								219	2
	1		4	2	1				1	1								20	
6	1		1		1	1	1			4								27	
1	1	1	2		2				2	1								14	3
6	5				3		9	3	2	1								91	
24	1	16	4		3	3	7	1	6	4								166	3
2	4		2	2	2	2	4		3	3								36	
1	1		1		2			1	1									19	
6	1		4		2	6	1	1	3	3								52	
9	7		4	1	2	3	4	1	4	2								178	
1																		11	
43	19	2	15	28	24	17	16	18	39	9								794	5
825	7	618	12	341	1	155	585	19	392	369	367	3	712	2	332	2		12,200	107

		FOURTH QUARTER.									
CLASSES OF DISEASES.		YEARS .....		1839.	1840.	1841.	1842.	1843.	1844.		
MEAN STRENGTH.....				911.	805.	615.	773.	922.	748.		
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
Fever	Febri congestiva.....		3								
	Febri continua communis.....		1				1	3			
	Febri intermittens quotidiana.....	243	116		36		46	347		297	
	Febri intermittens tertiana.....	172	136		46		76	194		86	
	Febri intermittens quartana.....	26	5		2		2	11		1	
	Febri remittens.....	11	7		13		17	25		13	
	Febri typhus.....										
Eruptive fevers ....	Febri typhi icterodes.....		1								
	Erysipelas.....	9					2	1		2	
	Rubeola.....										
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....										
	Diarrhoea.....	44	60		37		76	39		32	
	Dysentery acuta.....	19	8		9		20	13		12	1
	Dysentery chronica.....	5	12		2		1	3	1		
	Enteritis.....		1								
	Hepatitis acuta.....		1								
	Hepatitis chronica.....										
Diseases of the respiratory system.	Obstipatio.....	8	4		6		25	13		8	
	All other diseases of this system.....	34	16	1	14		16	28		10	
	Bronchitis acuta et chronica.....		2				3	15		6	
	Catarrhus.....	32	39		29	1	73	86		42	
	Phthisis pulmonalis.....		2				2			1	
	Pleuritis.....	5	3		2		4	4		2	
	Pneumonia.....		1					2		4	
Diseases of the brain and nervous system.	All other diseases of this system.....	1	1				1	2			
	Cephalalgia.....	3	1		2		12	7		3	
	Delirium tremens.....		10					1		5	
	Epilepsia.....	2	10		2		1	3		1	
	Neuralgia.....		1					4		4	
	All other diseases of this system.....	2			1		2	5		1	
	Gonorrhoea.....	1	11		7		4	13		19	
Diseases of the urinary and genital organs.	Structura urethrae.....							2			
	Syphilis primitiva.....	1	2		1					9	
	Syphilis consecutiva.....		2		2			1		3	
	All other diseases of this class.....	2	3		4		1	1		3	
Diseases of the serous and exhalant vessels.	Ascites.....		1								
	All other diseases of this class.....				1						
Diseases of the fibrous & muscular structures.	Pernio.....		1								
	Podagra.....		2								
	Rheumatismus, acutus et chronicus....	27	23		24		32	29		36	
Abscesses and ulcers....	Phlegmon et abscessus.....	6	18		14		34	21		24	
	Ulcus.....	12	13		7		12	14		9	
	Ambustio.....	7			3		4	1		6	
Wounds and injuries....	Concussio cerebri.....				1						
	Contusio.....	14	25		29		39	56		27	
	Fractura.....	1	2		3			1		3	
	Luxatio.....	2	3		4			1		1	
	Pinatio.....				1			1			
	Subluxatio.....		6		4		11	4		4	
	Vulnus incisum.....	26	13		13		16	21		7	
	Vulnus laceratum.....									6	
	Vulnus punctum.....		1		1		5	6		1	
	Vulnus scilopetum.....		5		1	1	1	2			
Miscellaneous.....	Debilitas.....	5	5		3		3	1		2	
	Ebrietas.....				3		2	12		16	
	Hæmorrhous.....	1	8		3		4	4		3	
	Hæma.....	1	1		1		2	2		4	
	Morb. cutis.....									2	
	Morb. oculi.....	7	5		7		15	13		7	
	Scorbutus.....		3		1						
	All other diseases.....	66	46		31		53	25		28	
	Total.....	795	632	3	391	2	616	1,038		749	1

## AMONG THE TROOPS AT POSTS IN THE SOUTH INTERIOR—WEST.

FOURTH QUARTER.																		AGGREGATE STRENGTH.			
1845.		1846.		1847.		1848.		1849.		1850.		1851.		1852.		1853.				1854.	
559.		290.		277.		312.		462.		373.		310.		352.		464.		367.		8,540.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
							1				1				2		1		2		12
308		107			47		31		106		90		8		104		193		47		2,146
51		23			15				18		51		21		51		59		17		1,016
3					6		4		1		1		8		1						71
36		29			26		6		1		8		7		26		14		11		250
					1																1
																					1
		1							7						1		1		1		25
					1																1
															3	2					3
26		5			15		30		32		16		31	1	23		14		22		502
1		4			2		4		14		5		9		17	1	9		8		154
1					4		6	2							1	1					33
2	1						1		1				2				1				7
																					1
4		3			2		7		4		5		14		7		9		11		130
10		4			7		1		3		7		7		10		13		9		189
8		7			2		2		2				3		4						54
31		6			22		7		8		11		11		29		12		18		456
		1																			2
2							1		1		2				3		3		1		33
3	1	2			1						2				2	1			1		17
1		3											1								10
1		1			1				2		6		1		2		2		1		45
7	1						2		1								2		3		31
1																			1		21
					1				1		7		1				3		2		24
1	1	2	1												1						15
8		3			4		9		5		1		2		1				3		91
																					2
16		1			3		7		3		1				1						45
6		1					3		1		3				1						23
5		2			3		4		3		3						1				35
							3														4
		1							1		1						1				5
							1		1		2										5
																	1				3
8		8			9		17		11		6		5		7		12		12		266
17		14			13		11		14		21		4		15		20		30		279
7		1			3		1		15		4				3		4		11		116
1					1		1		1				2				2		1		30
																	1				2
32		15			14		12		10		8		14		22		21		19		360
		1					1				1	1	1				2		2		18
																					10
		1							3												6
6		3			3		5		4		1		7		5		12		6		81
7		4			6		5		12		5		8		7		15		8		173
3					5		1		2		4		2				1		1		25
4		2											2				1		1		24
		1					1		1		1		2	1	1		1				17
1		2					19		1						3		1				46
11		3			1		2		3		1		8		3		6		3		74
1		2			1		3		1		3		3				2		5		44
							3		5		1				1						21
		3							5		3						2				15
6		7			2		4		1		3		16		6		4				103
							2														6
16		7			17		10		16		7	1	16		14		26		9		387
652	4	280	1	238	238	2	321	292	2	216	2	377	5	455	206					7,566	42





# FLORIDA.

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## THE ATLANTIC COAST OF FLORIDA.

THIS region extends from the 24th to the 30th parallels of north latitude, and includes the following military stations: Fort Marion, Camp near New Smyrna, Fort Pierce, Fort Dallas, and Key West Barracks.

### FORT MARION.

[From first edition U. S. Army Vital Statistics.]

“Fort Marion is in the city of St. Augustine, which is situated on the bay of the same name. It is distant about two miles from the ocean, and about half a mile from Anastasia Island, which divides the bay from the ocean. The St. Sebastian, a small stream, runs within half a mile of the town; and the North river, which rises about 35 miles north of the city, empties into the ocean immediately opposite the fort. There are a few marshes in the vicinity, but they are inundated twice every 24 hours by the tides; and there are also some low *hammock* lands from two to six miles distant, from which, when the wind prevails from the southwest, clouds of mosquitoes issue in the month of June, subject to be driven back as the wind changes. The site of the city is slightly elevated, being about twelve feet above the level of the ponds and marshes in the vicinity. The adjacent country is level and generally sandy, some parts being sufficiently rich in calcareous and vegetable matter to produce most of the vegetables cultivated at the north. Oranges flourish here most luxuriantly; but, in the early part of 1835, all the groves in the northern half of the peninsula were wholly destroyed by frost—an occurrence previously unknown.

“St. Augustine has long been celebrated as a winter residence for pulmonary invalids; but the city itself has claims upon the traveller's attention, not the least being the fact that it is the oldest town in the United States. The fort is also one of the oldest in the United States. It was finished, as appears by its now nearly illegible inscription, in 1756, in the reign of Ferdinand the Sixth. The walls consist of a concretion of sea-shells obtained from quarries on Anastasia Island; and as the material, under a bombardment, crumbles away without suffering fractures, the fort, duly manned, would be almost impregnable. The barracks and hospital are situated directly on the bay, about a mile south of the fort. The position of these buildings is eligible in every respect.

“This post has been at all times justly esteemed for its salubrity. Compared with the average mortality of southern posts in general, this station is found to exhibit a much lower ratio. The annual average of fevers of malarial origin is very low—that of intermittent fever being 20, and that of remittent fever 11 per cent. It is seldom that diseases of a malignant character appear at St. Augustine. Towards the close of the present year, (1839,) yellow fever, which ravaged the principal cities of our southern States, made its appearance at this station. This is only the second time that this epidemic has prevailed in this city within the period of 20 years; while at Charleston, we are told by Professor Dickson, that in 24 years' practice, but three have passed without his knowing the occurrence of yellow fever. The period at which it

prevailed first at St. Augustine was immediately after the cession of the province by Spain. As much filth had been allowed to accumulate during a succession of years, both at this place and at Pensacola, the circumstances incident to its removal by the American authorities were regarded as the exciting cause of the disease by the medical officers of the army. The experience of a century and a half teaches us that the causes of yellow fever are perennially present in our southern cities. Indissolubly connected with our soil and climate, it maintains the same relation towards the animal economy, as the malaria of our immense low country. As regards the essential cause of yellow fever, we still remain in the dark. It is manifest, however, that to develop the cause, and to keep up its action, requires a high range of atmospheric temperature; and as this condition seldom obtains on the coast of Florida, it would seem to afford an apparent explanation of its infrequent occurrence in this region. As the extremes of temperature are much modified by geographical position, and as the combined influence of the various causes acting in the most intense degree appears necessary for its development, a link in the chain seems to be wanting. At Key West, as in the islands generally of the West Indies, yellow fever has prevailed with much malignity."

Although, for reasons elsewhere given, the vital statistics of the Florida war are not included in this report, it is deemed proper to notice, in this connexion, an epidemic (yellow fever) which occurred at Fort Marion in 1841, concerning which Surgeon J. B. Porter, in November of that year, reported as follows:

"The first case of yellow fever which ran a regular course to a fatal termination was admitted on the 3d of October, and died on the 10th, after a much longer illness than the subsequent cases. In order to give a full description of the disease as it prevailed, the progress of the most severe cases, as they went on, apparently unchecked by remedial means, to a fatal termination, will be given. The patient was usually taken with prostration of strength, sometimes chilliness, almost amounting to a rigor, and cold extremities; reaction rarely came on, or was very partial and temporary. Early in the disease there was great thirst; dry tongue, sometimes a moist one; heaviness of the head, or giddiness; red or watery eyes; pain, or tenderness, of the globe of the eye on slight pressure; intense pain, or stricture, over the eyes or frontal region; sometimes pain of the back or loins; pulse quick, frequent and weak, or slow, weak, and uncertain; respiration heavy; great irritability of the stomach; and frequently pain or tenderness on pressure of the epigastrium.

"In its progress, the eyes and skin became gradually yellow, until the whole body was of an intensely yellow hue; *black vomit* came on; tongue became black, and there was hemorrhage from the mouth and nostrils; frequently vibices; hiccough; delirium, or coma; and death closed the scene.

"Some few cases had a short stage of reaction; beating of the carotids; flushed face; redness and burning of the eyes; pain of the head; tongue white, gradually becoming yellow; excessive thirst; pulse full and pretty strong; hot and dry skin; respiration heavy and hurried; nausea and vomiting of a thick ropy mucus; and urine small in quantity, and high colored. The whole body and eyes early became yellow, and the disease went rapidly on, with *black vomit*, hemorrhage, delirium or coma, to a fatal termination. The duration of the disease in the fatal cases was from 48 hours to 4 or 5 days; some survived several days longer in a state of insensibility, without the least prospect of recovery. Between the most severe yellow fever and simple remittent, of which there were a few cases, there were all grades of disease. No case has been registered as febris icterodes, unless some of the decided symptoms manifested themselves, and they had generally all the following, viz: redness or burning of the eyes; a pain of the eyeball, especially on pressure, and pain over the eyes in the frontal region; great disturbance of the stomach; and particularly yellowness of the eyes, forehead, and sometimes of the breast. Unless nearly all of the above symptoms were present, especially the yellow hue, the disease was not registered febris icterodes, but as febris remittens.



"The most marked cases of febris remittens partook of the nature of the prevailing epidemic, and were generally characterized by the want of action consequent on loss of vital energy.

"In the treatment of febris icterodes, the few cases which had considerable reaction were bled; free scarifying and cupping, cold ablution, and mercurial and other cathartics were used. But, in general, the lancet was considered inadmissible, on account of the exhausted condition of the patient; he was cupped freely on the epigastrium and spine, warm stimulating pediluvia, free application of sinapisms to the limbs and epigastrium, and epispasties at a later period; mercurial and other cathartics were freely given. In addition to the above means, the irritability of the stomach was allayed by effervescing mixtures of carbonate of soda, freely given: stimulating enemata freely used, &c. Whenever slight pyalism was produced, whether early or late in the disease, the patient became better, generally bore the administration of tonics well, and convalescence was soon established.

"In the advanced stage, quinine and other tonics were used; and wine or brandy and water, in some instances, was beneficial. The most universally useful tonic was good London porter, which almost always agreed with the patient, and materially contributed to his restoration. There is a class of cases, which are benefited by no kind of treatment whatever—those which occur in old drunkards; in these, no matter what is attempted, the disease invariably runs to a fatal termination."

This epidemic continued until the 15th of November, on which day, and on the 16th, there were white frosts, and on the 17th a black frost. The total number of cases treated was 56, of which 25 proved fatal.

#### MEDICAL TOPOGRAPHY AND DISEASES OF "CAMP NEAR NEW SMYRNA."

By Assistant Surgeon Robert Southgate: 1853.

An unprovoked assault having been made upon a camp of peaceful Seminoles, by a party of white men anxious to provoke hostilities, and fears of retaliatory measures on the part of the Indians having been excited among the peaceful settlers, company L, 2d artillery, stationed at St. Augustine, was ordered to take post at New Smyrna, and extend protection to the settlements in its vicinity. In obedience to orders, the company, in the latter part of February, 1852, marched to and encamped at Dunlawton, the most important settlement, twelve miles north of New Smyrna (properly so called), to which place a detachment was sent, as also to Enterprise, on the river St. John's. This last detachment was called in early in July, several of the men having suffered from severe intermittent fever, and the position not being deemed of sufficient importance to risk the still greater sacrifice of health which might be reasonably anticipated during the course of the summer and fall. The geographical position of the camp is in latitude  $29^{\circ}$  north, longitude  $81^{\circ} 7'$  west. It is located on the right bank of the Halifax river, eight miles from the Mosquito bar, over which the river flows into the ocean. It is about two miles due west of the ocean, from which it is separated by the river and a long narrow peninsular strip of land, formed by ridges of sand and shells, upon which there is a growth of the saw-palmetto, small live-oaks, and a variety of unimportant shrubs.

The physical aspect of the country in the vicinity of the camp presents no feature of interest. Sterile flatness would express its appearance, did not a fertile swamp, here and there, prove by its presence the exception to the rule, of its utter worthlessness for the purposes of agriculture. The geology of Florida presents an unexplored field for scientific research. The *prima-facie* impression on the mind of the observer is, that the country in the vicinity of the camp has been, at a former period, beneath the surface of the waters of the neighboring ocean; and whether we adopt the opinion that it has been lifted from beneath the waves by a submarine force, or that the waters have subsided and left it dry (the former deemed the more tenable), there cannot be a doubt that in its formations we read, geologically speaking, the history of a modern era. Within the memory of man, great changes have been effected in the physical appearance of the

coast in this vicinity, by forces still in operation—the action of high winds, the disintegrating power of the waves, when lashed into fury by the great storms which occasionally sweep along the coast; and it requires no stretch of imagination to realize that, if at some future day an extensive breach should be effected in the narrow peninsular strip of land described as stretching between the camp and the ocean, the country for miles back would be completely inundated.

A section of the surface near the camp presents, in descending series—1st, a very thin layer of vegetable mould; 2d, strata of sand variously colored, (a thin layer of dark mould, probably the decomposed sea-weed which at certain seasons is deposited in thick layers on the shore, and which I have observed to be gradually covered in by sand, occasionally separating the strata;) 3d, the coquina rock, which is found near the camp, at an average depth of eight feet. This interesting formation exists in various degrees of compactness—in some places, crumbling by slight pressure into smaller fragments; in others, presenting a firmly cemented and useful material for building purposes. This shell formation has, I believe, been classed with the eocene (lower tertiary) group. The practised palaeontologist must decide this point, and for him the fossil geology of Florida presents a fresh and inviting field of labor. The rich swamp, to be referred to as having probably influenced the health of the command, presents a soil of the average depth of two feet—a dark loam reposing upon marl, which exists in great abundance; beneath the marl we find strata of sand and the shell formation.

The medical topography of the camp may be described as follows: The site of the encampment is a shell bank, elevated about nine feet above low-water mark, immediately in the rear of which we have a flat marshy surface, inundated by the river during high tides. About one mile west of the camp there is a fertile swamp, which has been partly cleared, dyked, and devoted to the culture of the cane; this is skirted by an extensive pine barren, of which the country principally consists. The points of medical interest are: the proximity of the ocean—favorable to health; the extensive marshy surface in rear of the camp, presenting to the sun's rays material for the production of a febrile agent—directly the reverse. The influence of the fertile swamp in the production of disease may be estimated, when the facts connected with it shall have been passed in review.

Lying mostly between two seas, Florida is, by position, entitled to an equable climate; and yet, on this coast, and in this latitude, equability can hardly be considered characteristic of it. During the winter and spring, the atmospherical changes are often sudden and marked. Even in this respect, however, Florida, contrasted with other sections of our country, can claim a superiority. Rarely is the change so great as to impress an individual, in fair health, uncomfortably; and the invalid has, generally, sufficient warning to guard against it. In relation to general health, indeed, equability can hardly be considered the most vital element of climate; the highest degree of physical vigor being attained in climates of which variableness is a striking quality. The human organism is constituted for such mutations; and, were it subjected to the monotonous impression of a uniform temperature for a length of time, its powers would, unquestionably, languish. Even in special cases, such as chronic diseases of the lungs, the marked difference, during the summer, between the temperatures of day and night, so characteristic of the climate of this coast, would probably be of service to the invalid. The refreshing sleep that may be enjoyed during the cool nights of midsummer, with the invigorating sea-breezes of the day, must in his, as well as other cases marked by debility and irritation, promote the general health; while the fact that, during the winter, the temperature is rarely so depressed that exercise in the open air may not be enjoyed, will render it a salutary residence during that season of the year. Exercise in the open air, by maintaining the vigor of digestion, and appeasing the wearing excitement of the heart and arteries, must economize the vital force and save the integrity of the tissues; and, to the consumptive invalid, these considerations are of the very first importance.

I write in reference to the northern invalid, whose skin has been constricted during successive hard winters, who has suffered from frequent catarrhs, and in the upper portion of whose lung



the fatal deposit has been made; to him, a removal to Florida holds out the prospect of greater length of days. I am credibly informed that there are residing between this and Indian river, three individuals, who left the north, presenting the symptoms of advanced pulmonary disease, and, by a permanent residence in this delightful peninsula, have regained an unexpected measure of health. Making due allowance for probable errors of diagnosis, it is not improbable that the entire change of life, the newness of impressions—mental, moral, and physical—may have imparted a renewing impulse to the energies of the system, by which the secretion of tubercle has been checked, and that already deposited rendered inoperative for mischief. On the other hand, for those who become consumptive in Florida, a removal to a more bracing climate is imperatively demanded. In such, the rapid melting down of the tissues of the lung during the warmer months, it has been my painful duty to witness in more than a single instance. In St. Augustine, the climate of which differs but slightly from that of this camp, tuberculosis of the lungs is not a rare disease. Of one family, originally numbering ten, two alone survive—eight having been hurried to the tomb by this formidable malady. Among the negro population it is not uncommon, and would seem to be on the increase—three cases of the hemorrhagic variety, all terminating in a rapid decline, having come under my observation. The cause of this increase in a class, on many accounts interesting, is worthy of the investigation of the philanthropist and physician.

The proximity of the ocean, from the surface of which a large amount of aqueous vapor is raised into the atmosphere by the action of the solar rays, renders the climate of the coast a moist one. This meteorological condition is indicated by very palpable signs. The rapid oxidation of iron, the difficulty of keeping instruments bright, the necessity of frequently airing clothing to preserve it from mildew, are matters of common observation. The planters on the coast remark that their crops stand a long drought remarkably well; a circumstance due to the moist condition of the atmosphere and the copious precipitation of dew, supplying the long absence of rain. These sensible effects are manifested most decidedly during the heats of spring and summer, and in relation to health may be considered favorable. Springing fresh and pure from the bosom of the ocean, the aqueous vapor is mingled with no hurtful agent; and, by communicating a refreshing element to the atmosphere, exerts a benign influence upon the system during its subjection to elevated and protracted atmospherical heat; differing from that arising from the ponds and swamps of the interior, which depresses the spirits, and frequently bears on its wings unwholesome emanations. During May, June, July, August, and September, when sickness most prevailed, Fahrenheit's thermometer ranged between  $79^{\circ}$  and  $89^{\circ}$ . For a few hours during the month of June, it indicated  $93^{\circ}$ —the greatest elevation noted during the summer. The coolest portion of the twenty-four hours was the period embraced between midnight and day-break. The warmest part of the day was, as a general rule, between the hours of 9 and 11, A. M. The greatest difference between the temperatures of day and night occurred during March and April, in the spring, and the months of October and November, in the fall; and, during these months, the digestive and respiratory apparatus suffered most disturbance. During the summer, when the land breeze from the south and west was blowing, the temperature of  $86^{\circ}$  was very oppressive: the respiration was labored, the spirits depressed, the indisposition to bodily and mental exertion almost insuperable. With intense anxiety was the ocean breeze expected! The first ripple on the surface of the water to the southeast was the signal of approaching relief! By the full establishment of the refreshing current, mental and physical elasticity were restored; hope took the place of despondency; and the past was remembered only to heighten the enjoyment of the present. The mercury in the thermometer generally fell about six degrees in ten minutes, without producing any other than a sense of comfort and well-being. The sea-breeze, blowing with great regularity, is, indeed, the great sanitary agent on the coast of Florida, tempering the protracted heats of summer, and, by its nerve-strengthening power, restoring the lost tone of the system.

The summer climate of the coast may be considered a very fine one. A few miles back from



the ocean it does not merit the same praise; and the contrast a single mile west of the camp was so marked as to excite surprise in every one who tested the difference. During the winter, on the other hand, an interior position is more suitable for the pulmonary invalid; and a dry pine-barren country, through which he may roam at will, and inhale the balsamic atmosphere, will prove most friendly to his lungs, and best sustain the flagging energies of his system.

The land-breeze during the summer is, in all its properties, the reverse of the ocean current. Instead of being nerve-strengthening, it is nerve-debilitating; and during its prevalence there was invariably an increase of the sick-list. Fortunately, the sea-breeze—the better genius of the coast—prevails, and, in a great measure, neutralizes the power of its antagonist.

The subjoined abstract will show the diseases and the number taken sick since this camp was occupied. What were the disease-producing agents during the spring, summer, and fall? With respect to the catarrhs and diarrhœas, the majority of which were so slight as not to amount to disease, and accordingly are not reported, they occurred in months during which there was the greatest contrast between the temperatures of day and night; and a moment's reflection upon the physiological sympathies and relations of the skin with the digestive and pulmonary mucous membranes will suggest the rationale of their causation. Not so with intermittent fever; doubt still clouds the professional mind, and the question presents itself as to the existence or non-existence of a specific cause.

For a long period there has been conceived to be a relationship between the soil and certain forms of disease; marsh miasm having been considered the fruitful parent of intermittent and remittent fevers. Received as a medical fact, which it was deemed a heresy to dispute, it has, in these latter days, been called in question, and distinguished members of the profession seem disposed to discard it as a dogma that has no substantial basis! It is plausibly argued that ordinary meteorological influences—heat, dryness, moisture, alternations of temperature, changes in the electrical state of the atmosphere, &c.—are adequate to produce these and other forms of disease; and that where we have such causes acting upon the system, it is an errant philosophy to seek for others! A concise statement of the medical history of the command during the past summer may throw some light upon this point.

In sketching the topography of the camp, it was stated that there existed, some distance in its rear, a fertile swamp which had been partly cleared, dyked, and devoted to the culture of the cane. On its arrival at Dunlawton, the company encamped on this ground, which offered the shelter of a few old sheds. The camp was surrounded by a quantity of vegetable matter in process of decay, from which it was thought might be evolved, under the action of elevated atmospheric heat, a febrific agent. It was accordingly deemed expedient to move the camp to its present position, and early in April the movement was effected. As a mill and other valuable property in the field would have been exposed to violence in the event of an Indian incursion, a guard was left for its protection, which was relieved by a fresh detail every twenty-four hours. Scattering cases of intermittent fever occurred during the month of April, increased in frequency and severity during the months of May and June, so as seriously to impair the efficiency of the command, and render the discontinuance of the guard at the sugar-field a matter of necessity.

In moving the company to a new position, the cause of the disease was not entirely evaded. The marshy surface immediately in rear of the camp, subject to occasional overflow, and presenting to the solar rays material for the production of disease, maintained the morbid impression in those who had already suffered, and eventually affected that portion of the command whose special duties had exempted them from detail for guard. Hence, before the expiration of the summer, every enlisted man, with a rare exception, had suffered one or more attacks of intermittent fever. It is an interesting fact, and illustrative of the facility with which all the sickness might have been avoided, that the proprietor of Dunlawton, with his family, had enjoyed uninterrupted health for a series of years, by retiring, for the summer and fall, to their sea-shore residence, distant less than two miles; and that the penalty of the experiment of spending the summer at Dunlawton was the illness of himself and every member of his family,

with a single exception. So active was the endemic influence, that nearly all the negroes on the plantation, young and old, were affected by it. The case of the company baker is not without interest. After the withdrawal of the command from the sugar-field, he alone remained there in the discharge of his special duty. A very few days elapsed before he reported sick with severe premonitions—pain in the back and head, giddiness, gastric distress, coated tongue, with a viscid and bitter state of the secretions of the mouth. After the operation of an emetic, which led to the copious discharge of acrid bile and vitiated mucus, a simple tertian was revealed, which yielded speedily to the sulphate of quinine. On his restoration to health, he was returned to duty, with instructions to leave the field at sunset, and pass the night in the new encampment. In a very few days he again reported sick with a similar train of symptoms, which yielded to similar treatment; and having been again returned to duty, he was for the third time similarly, though not so severely, affected. Now there is nothing strange in all this; and, doubtless, medical officers will remember similar cases, as strikingly illustrative of the influence of peculiar localities, and the functional derangement of the digestive apparatus produced by the cause of intermittent fever. The effects were as specific as those produced by any poison; and upon such evidence the mind may repose, until the advance of science shall enable us still further to disclose the mysterious agents by which we are surrounded. It is not every season, however, that presents so striking a manifestation of the endemic influence: due, possibly, to the fact (and in this presenting an analogy with the vegetable productions of the soil) that the elements which, by their combination, produce the poison, become deficient, and require repose for their reproduction.

In connexion with this last paragraph, it may not be irrelevant to mention a case of sickness, characterized by some peculiar features. The greatest sufferer from intermittent fever, during the summer and fall, was Private Otto, hospital steward. The dispensary tent, in which he slept, was pitched just on the border of the marshy plain, described as being immediately in rear of the camp. It was in the centre of a small grove of the cabbage-palmetto, which sheltered it from the rays of the sun. The hospital tent was in front of it, and completely obstructed the current of the sea-breeze; the position was not one of election, but necessity. The physical circumstances in which he was placed, were great dampness, and the rapid growth of a beautiful green mould, that night after night covered the surface of the vegetable extracts. The symptomatic peculiarities of the case were distressing vertigo, and irritability of stomach, which continued throughout the intermissions. He suffered no less than five attacks of the disease, and his case forcibly recalled to my mind several which formed the subject of a communication made to Professor J. K. Mitchell some years since, after a perusal of his lectures on the cryptogamous origin of fever. Had the fungus-producing atmosphere any influence upon Private Otto? If not the cause of intermittent fever, may the unusual development of this form of vegetable life in miasmatic localities be an explanation of the malignity it occasionally displays? These were questions which presented themselves to my mind, when I reflected upon the coincident peculiarities of cases separated by time and distance. The cryptogamic theory is destined, perhaps, like all that have preceded it, to be numbered among the unsuccessful efforts to advance the cause of truth; but the ingenuity and research displayed by Dr. Mitchell in its advocacy entitle him to the thanks of the profession. The detachment stationed at New Smyrna suffered from intermittent fever, but not to the same extent as the troops in camp at Dunlawton. The medical topography of the two places is similar; but the latter presented a surface fitted for the production of a stronger poison, and the emanations from its fertile swamp made an impression which was felt long after the command was removed from its direct influence.

With respect to New Smyrna, the amiable and philosophic Abbé Raynal, in his *History of the Settlement of the East and West Indies*, remarks: "The Greeks groan under the Ottoman tyranny, and must be inclined to shake off the detested yoke. This was the opinion of Doctor Turnbull, when, in 1767, he went to offer an asylum in British America to the inhabitants of



Peloponnesus. Several of them yielded to his solicitations; and, for the sum of one hundred guineas, he obtained leave from the government of the place to embark them at Modon. He landed in Corsica and Minorea, and prevailed upon some of the inhabitants of the two islands to follow him. The emigrants, to the number of one thousand, arrived in East Florida, with their prudent conductor, where sixty thousand acres of land were granted to them. This would have been an immense possession, even if the climate had not destroyed any of them; but they had, unfortunately, been so much thwarted by the winds as to prevent their landing before summer, which is a dangerous season, and which destroyed one-quarter of their number. Those who escaped the first disaster have since enjoyed perfect health, which has only been affected by a few fevers."

His speculations upon the future of this settlement are as follows: "Why should not Athens and Lacedemon be, one day, revived in North America? Why should not the city of Turnbull become, in a few centuries, the residence of politeness, of the fine arts, and of eloquence?" Its present desolation holds out but little prospect of the fulfilment of his anticipations, and a paragraph in the same chapter may partly explain the present condition of the settlement. "The soil of East Florida, (says Raynal,) being a great deal too sandy, constantly drove away all men who were desirous of making a rapid fortune. It would scarcely have been peopled, except by some extraordinary event. The troubles by which North America hath been agitated have driven to that comparatively barren soil a few peaceful citizens, who had a settled aversion for disputes, and a still greater number of men who, either from ambition, habit, or prejudice, were devoted to the mother country." The apologist for East Florida may attempt to explain away the cause of its slow population; the Indian phantom may now and then be raised, clothed in all its horrors; but the face of nature remains the same, and he who has examined the country with an unprejudiced eye will remain a skeptic as to its future populousness. In another chapter of his history, the Abbé Raynal remarks:

"The first Spaniards who settled there would probably not have recovered from those dangerous fevers, with which most of them were attacked on their arrival in Florida, either in consequence of the food of the country, or of the badness of the waters; but the savages taught them that, by drinking (fasting and at their meals) water in which the root of the sassafras had been boiled, they might depend upon a speedy cure. The experiment, on trial, proved successful."

These extracts are quoted to show that, at the earliest period of the settlement of the Floridas fevers were rife; and, doubtless, under a less improved treatment than at present pursued, many cases might have terminated in death. In those of the past summer, there were occasionally urgent symptoms; and it is not improbable that, without the invaluable aid of the sulphate of quinine, the intermittents might have degenerated into remittents: and these last, after having lasted sufficiently long to impair the nervous energy and vitiate the circulating fluids, have lapsed into a fever resembling typhus. It is a weak enthusiasm, therefore, to contend that Florida is the healthiest country on the face of the wide world. It would be strange, indeed, if her fertile swamps and hammocks did not generate fevers. It has been proved, however, that on her salubrious sea-coast almost perfect immunity from fever may be enjoyed; and it is high praise to say that, if the bane exists, a way of escape is within easy reach of those who select Florida for a home.

I am not aware that the health of the command was seriously modified by any other than the endemic influence. That the nervous and sanguiferous systems felt the influence of long continued and elevated solar heat, may not be doubted; but the loss of tone, resulting from its action, was countervailed by the invigorating breezes from the ocean. The diet of the soldiers consisted of the wholesome army ration, with good fish caught in the Halifax river, and an occasional supply of venison. The water, though slightly brackish, was good. No irritation or other appreciable influence was produced on the alimentary canal; and, considering the well-known imprudence of soldiers, the immunity from diarrhoea was rather remarkable. During



the summer, indeed, constipation seemed to be the rule—diarrhœa the exception. In the month of November, on the other hand, when the nights were decidedly chilly, nearly every relapse into intermittent fever was either preceded or followed by diarrhœa. It has been stated that many cases of the endemic were of a severe character—the irritability of stomach, the pain in the back and head, &c., announcing no slight impression on the system. I do not wish to convey the idea that they were of a dangerous character; for a large majority of the fevers of Florida yield readily to treatment. In estimating, however, the force of the cause, due consideration should be had of the character of the subject upon which it acts. The company consisted mainly of recruits enlisted at the north, who were sent into a southern camp at the commencement of warm weather, and kept in an unhealthy position long after the supposed necessity had passed. Many of them, of previously intemperate habits, had been caught up by recruiting sergeants about the filthy purlieus of our large cities, and hurried into the service. In looking at the detachment as it landed, one could not help imagining that the commanding and medical officers at some recruiting depot, disgusted with the subjects of their official care, had thrown open the doors of the guard-house and hospital, and thrust the inmates forth, to be hurried aboard of a transport bound for some distant station! Such was the morbid mass exposed to the causes of disease! Had these men been placed in garrison, disciplined into something like decency, and instructed by the force of example into a proper care of themselves, they would have suffered less severely from the exposures of a camp life; and the fact that the rare examples among them of a better class and more intelligence suffered less severely, and recovered with more facility, shows that such advantages secured them comparative immunity. In the army, indeed, we are presented with striking illustrations of a truth, which should be engraved on the door of entrance to every hospital—the intemperate suffer most severely from disease, and, as a general rule, fall its earliest victims.

Assuming the fact, that intermittent fever is the result of a specific cause, it is allowable, within certain limits, to speculate upon its mode of action. The late distinguished professor of the theory and practice in the University of Pennsylvania advocated the gastric pathology of this fever with great eloquence and force; and he who has observed the disease closely will admit that, let the antecedents in the intimate recesses of the system be what they may, the first appreciable derangements exist in the digestive apparatus. Nor is this fact without a practical bearing; for, by carefully obviating the initial disturbance, the attack may, frequently, be warded off. Being consulted by the proprietor of Dunlawton as to the health of several of his children, who had suffered repeated attacks, I directed his attention to the coated tongue and torpor of the bowels which preceded them; and, by the use of gentle but efficient means to correct the frequently recurring functional derangement, the attacks were interrupted and health restored. In a miasmatic locality, medical men are presented with three well-marked manifestations of the endemic influence in the production of intermittent fever, neuralgia, and the malarial cachexia. It is well known that the last two may invade the system without the patient having ever had a paroxysm of fever. Various grades of the cachexia are met with in unhealthy districts; and the subjects of it will express a wish to have a regular attack of the ague, as a means of getting better of their complaints. Intermittent fever is, however, the most usual manifestation; and the case of the company baker, briefly sketched above, is strikingly illustrated. It will be remembered that marked gastric symptoms characterized his attacks, which were repeated three several times after as many exposures to the air of the moist rich sugar-field. The cause of the disease may, then, be reasonably supposed to make its primary impression upon the nervous system of the digestive apparatus: the capillary circulation of these organs is disturbed, and, as a necessary consequence, their secretory functions are perverted; hence the vitiated secretions which so prominently mark the onset of the disease. The intimate union and sympathy which exist between all departments of the nervous system, the important part which that system performs in all the vital movements, will readily account for all the subsequent phenomena—the pain and confusion of head, the rigors, the occasional con-

vulsions, the defective formation or irregular distribution of animal heat, the feeble action of the heart, the congestion of various organs, &c., &c. Occasionally, the morbid impression is too strong for the vitality of the system, which, after a short struggle, is extinguished. Fortunately, the *vis conservatrix* is generally successful; and the patient, after a violent commotion, (the particulars of which need not be detailed,) lies prostrate and bathed in perspiration—a gradual return to apparent health completing the circle. But the disease still exists; the peculiar cause has impressed a periodicity on these movements; the paroxysms, if not interrupted, are repeated again and again, with surprising regularity. Each repetition still further deranges the animal and organic functions; and although, after frequent paroxysms, the positive sufferings during an attack may not be so distressing, yet the appearance of the patient indicates that a healthy blood is no longer formed, and that his nutrition is seriously impaired. His emaciation is evident; his skin becomes sallow, harsh, and dry; he is troubled with constipation, or diarrhœa—usually the former; and the sequel of the history is, that his face becomes puffy, his abdomen tumid, the lower extremities œdematous, and general dropsy terminates the scene—dropsy from altered crasis of the blood. This form of cachexia I have seen on the St. John's river, in subjects who, for years, have breathed the endemic poison. The only hope for the patient, under such circumstances, is a removal from the abode of this mysterious power, a faithful course of mild alteratives and aperients with the preparations of taraxicum, a digestible and nutritious diet, and a steady administration of the great tonic-analeptic, iron. By the use of these means, and such others as particular circumstances may indicate, health may generally be re-established.

Intermittent fever is a subject of much interest to the army medical officer, inasmuch as it is encountered at every step of his progress. He has to deal with the disease under circumstances hostile to the full efficacy of his remedial means; for his patients have frequently only the shelter of a tent from the chill night air and the burning sun, and their continuance in unhealthy positions, which, for military reasons, cannot be abandoned, subjects them to the continued influence of the cause of the very disease he is attempting to cure; hence the liability to relapses and fresh attacks, which prove so harassing to the surgeon, and, occasionally, so ruinous to the health of the soldier. In every case of intermittent fever the practitioner will recognize the presence of two elements—periodicity and functional derangement of the digestive system. The former is located in the nervous system, and is occasionally manifested by paroxysmal neuralgias, which observe regular periods of recurrence. These are, clearly, affections of the nervous system, and, with a due regard to the condition of other organs, to be relieved by remedies mainly addressed to that system. The other element prominently marks the onset of the disease; makes it, according to its degree, mild or severe; and, by its occasional intensity, prevents the complete resolution of the paroxysm producing a remittent; which, after it has continued sufficiently long to produce loss of power and vitiation of the blood, verges toward typhus; or, if the acuteness of the disease has passed, and a chronic functional derangement is maintained by the long-continued operation of the cause, produces that cachectic condition described in a former part of this paper.

Every physician of experience in malarial fevers has witnessed the natural conversion of intermittent and remittent, and the lapse of the latter into a disease resembling typhus, and thence a retrograde movement into the more manageable disease; and in the treatment of the malarial cachexia, one of the favorable indications is the occurrence of a regular paroxysm of intermittent fever—the periodical element seeming to have been interrupted by the more powerful derangements of the system, and to reappear on their relief. As regards the treatment of intermittent fever, as it occurred at Dunlawton, I have but little of interest to communicate. Apprehending in some of the earlier cases a remittent form of fever, I administered at the onset the following powder: *R* Sulph: quin: grs. x; prot: chlor: hydrarg: grs. x; sulph: morphiæ gr. ss. M.

The severe pain in the head and back, the general malaise of the patient, &c., disappeared as by enchantment; an aperient next day completed the treatment. It struck me, however,



that signal as the relief seemed to be, the medication was too strong for the amount of disease, and that the patient was enfeebled by it more than could be considered justifiable. Accordingly, I pursued the more usual course of cleansing the alimentary canal by an emetic or cathartic, as seemed to be indicated, and administered quinine during the intermission; giving ten grains at the close of a paroxysm in quotidians, and in tertians administering the remedy in smaller doses, at regular intervals. If the patient "missed the chill," about ten additional grains were given during the two following days; and great care was taken to return no one to duty before all signs of functional derangement had disappeared. In all the more usual forms of intermittent fever, experience has satisfied me that this is the preferable course of proceeding. In pernicious intermittents, a very different medication is demanded. The life-force has received a blow under which it staggers; and the uncompromising administration of the great tonic-neurosthenic quinine is the sheet-anchor upon which we must rely for safety. The wonderful powers of this remedy, which, with magic touch, seems to exorcise the evil spirit, has led, perhaps, sometimes to a forgetfulness of other remedies, and a too exclusive attention to the periodical element. But the arrest of the paroxysms must not be considered, in all cases, a cure of the disease; and until the digestive apparatus is restored to a physiological state, as evidenced by a clear complexion and conjunctiva, a clean tongue, a restoration of appetite, and a regular condition of the alvine canal, the disease may be considered to exist. By attending to both the elements, and directing the appropriate treatment for their relief, the medical officer will have the satisfaction of saving his patients from protracted ill health. Fresh attacks they may have, while breathing the poison; relapses may be induced by their own imprudence; but the course above indicated will carry them through the summer and fall with unimpaired health, free from enlarged spleens and other visceral obstructions. Should he pursue an opposite course, and attempt to carry the citadel of the enemy by storm, rather than by slower and more regular approaches—should he purge his patient actively, and administer a large dose of the sulphate of quinine—he may, indeed, stifle the periodical element, but he may not thoroughly cure the patient, who, on being subjected to a drill of any length, will have to fall out of the ranks from inability to undergo the necessary exertion. It is, indeed, important to cure this disease speedily, for two-thirds of the command may be disabled by it; but a slower method will, in the end, save both time and trouble. As a matter of experiment, I abstained, in one case, from the use of quinine, and directed my attention to the element of functional derangement, which was treated by aperients and alteratives. By this method, the severity of the paroxysms was diminished by the amount of functional disturbance relieved; but the periodical element remained, and was eliminated by the sulphate of quinine. In this instance, a longer immunity from a second attack was enjoyed than in any other; and, although no practical inference should be drawn from a single case, the question fairly presents itself,—may we not be in the habit of resorting to the anti-periodic too early, and might we not gain in the end by thoroughly preparing the system for its administration?

Much, we apprehend, is yet to be learned upon the subject of intermittent fever; and a great boon would be conferred upon the profession by him who would make a series of careful observations upon the disease, the comparative value of large and small doses of quinine, the best means of obviating relapses, and various other points of interest. Notwithstanding the care which was taken to effect a thorough cure of the disease, second, third, and fourth attacks were experienced in the course of the summer and fall; not, I believe, from an inevitable necessity, but from a reckless disregard of ordinary precautions, and a wilful neglect of advice given. It is gratifying, notwithstanding every obstacle, that the month of December has expired without any serious impairment of health. And if, under the privations and exposures of a camp life, in a malarious locality, the medical officer shall carry his charge through an unhealthy season, with its physical vigor not seriously diminished, he may consider it a triumph of his noble art. The laws of nature he cannot annul; morbid emanations will continue to spring from the soil, and poison the common air; the scorching rays of the midday sun, and the chilling blasts of the



midnight winds, will alternately unduly excite and depress the vital movements of this mysterious frame; last, not least, the reckless transgressions of the laws of health and morals will assuredly reap their merited penalties. The medical man must, in humility, submit, and be content to exercise the high but limited power vouchsafed to him, of relieving the effects of causes wisely held from his control. In military life he will meet with much to annoy, and see enough to disgust him; and it will require a constant effort to school himself to patience with the subjects of his professional care. He should try, nevertheless, to realize the humane sentiment, that disease and suffering level all distinctions; that the poor, miserable inebriate, writhing on a bed of sickness, and the good man suffering its pangs, demand an equal effort of his skill. By adopting it as his guide on entering the service, the young medical officer will never have cause of self-reproach; and whether his professional efforts be crowned with victory, or covered by defeat, he will be sustained by the consciousness of duty faithfully performed. Above all, let him remember that the approaches of disease are often insidious; and that whatever may be the character of a soldier, (and many of them are trickish and prone to deceive,) his case should receive a calm and deliberate consideration. This advice may seem out of place; but the young medical officer will do well to bear it constantly in mind during the earlier portion of his army life, and until a more matured experience shall have made him acquainted with the specialities of the service.

The liability to relapses and fresh attacks of intermittent fever is well known to the army surgeon, and a subject of frequent and thoughtful consideration. Soldiers, as a class, are proverbially reckless. Although warned, when returned to duty, against throwing themselves into currents of fresh air after having been heated by drill or other military duty, I have known relapses repeatedly induced by such exposure. An hour's exposure to the ardent rays of the sun, in the passive amusement of fishing, has repeatedly brought back to the hospital soldiers who, a few days before, were returned to duty in perfect health. In one soldier, three successive attacks were traced to gluttony; and nothing but alarm, excited by the severity of the last, led him to restrain his appetite. But, of all the predisposing causes, constipation was the most usual. On returning soldiers to duty, they were distinctly warned against such a state, and directed to apply for medicine to obviate it. The very few who followed the advice, derived advantage from it; but in a large majority of second and third attacks, constipation had existed for several days. Nor is it difficult to explain why it should have been so. The retention of excrementitious material in the colon and rectum proves irritant to an extensive mucous surface, produces sympathetic disturbance of the stomach and liver, and co-operates with the cause of the disease in reproducing the element of functional derangement—it helps to forge the first link of the morbid chain. It is, indeed, vitally important at the south to guard against torpor of the bowels—a homely truth, which should receive the religious attention of every officer and soldier serving in that portion of our country. Military duties, exposing the soldier alternately to the hot sun and night air, are unavoidable causes of disease, with which the medical officer has but little concern. Invested, nevertheless, with medical charge of a command, he can give such advice to the sick and convalescent as may be of advantage to them. It is true that, through recklessness, few will profit by it; but he will have the satisfaction of having discharged his duty, and, apart from the emoluments of his commission, this is the only reward he can reap in the service.

In occupying a position in a region where malarial fevers may be anticipated, are there any measures that might be instituted against their access, or, falling short of this, that might temper the force of their attacks? This presents an interesting field of investigation. That a rigid enforcement of the laws of health would lead to beneficial results, cannot be doubted. Unfortunately, there is a very rare interchange of views between commanding and medical officers. The former do not, perhaps, appreciate the importance of such considerations; the latter, by the custom of service, are reduced too much to the condition of mere prescribers for the sick. What medical officer of experience is there who has not traced attacks of disease to the imprudence of soldiers, which might have been controlled by commanding officers—to exposure to

the broiling sun in hunting or fishing; to bathing at unseasonable hours, &c., &c.; this, too, when scarce an hour passed without some soldier reporting sick with fever? Who has not been vexed at seeing men, who a few days before had been returned to duty in perfect health, relapse into fever through exposures unnecessary and not in the line of their duties? Observation has satisfied me that a large amount of disease might be avoided, if officers in command, on the occupation of an unhealthy position, instituted, under the advice of their medical staff, a system of discipline having reference to the predisposing and exciting causes of disease.

The affections of the digestive and respiratory system were few in number, mild in character, such as might have occurred in any locality, and hardly deserve a special consideration in this paper. The diarrhœas yielded readily to a rational treatment. The dysenteries, being unattended by general excitement, were treated, for two consecutive days, by an oleaginous aperient in the morning, a large dose of Dover's powder at night, a warm sinapism to the abdomen morning and evening, with a fluid farinaceous diet. After the grade of local excitement had been somewhat lowered by these means, a combination of *hydrar: cum cretâ, pulv: Doveri, et pulv: rhei*, administered in moderate doses at regular intervals, soon caused the blood and mucus to give place to fecal discharges. After the disease has continued for some time, I think I have derived benefit from directing an enema of cold water before the patient rises in the morning, so as thoroughly to wash out the lower bowel. During the night, there is formed in the lower part of the colon and rectum an accumulation of vitiated secretions, which, calling into action by their irritant power the excito-motory system of that part of the bowels, leads to frequent sudden and involuntary efforts to expel their contents. The cold enema, by washing out the offending cause, and giving tone to the relaxed and congested capillaries, diminishes the frequency of these expulsive efforts, and materially promotes the comfort of the patient.

#### FORT PIERCE.

Fort Pierce, one hundred and seventy miles south of St. Augustine, is situated on a bluff about fifteen feet above the water-level of Indian river, on which it is established. The bluff on which the post is located is part of a high range of land which extends along the western border of the river for many miles, and is the most elevated portion of land in this region of country. Two hundred yards west of the post there is a pond, about three-fourths of a mile in circumference; the principal part of which is dry during the summer, exposing a sandy bottom, which is soon covered with grass. The country, generally, is very low, and in the rainy season is covered with water. In fact, it appears to be a succession of ponds, partially dry during the warm season. The water of the river is highly impregnated with salt, and abounds in oysters and fish of the finest description. The soil of the country consists of loose sand, and is very poor, producing pine, scrub-oak, and occasionally palmetto. The water used in drinking is impregnated with sulphuretted hydrogen, and affects the bowels of those unaccustomed to it; these effects, however, soon wear off, and it becomes palatable and wholesome. The prevailing winds in summer are southeast, or trade-winds, and northerly winds in winter. The heat of a vertical sun in the summer season is very oppressive, which, together with the mosquitoes, renders a residence here during the months of May, June, July, and August, almost insupportable. These evils are, however, greatly ameliorated by the sea-breeze, which generally prevails here throughout the day during the warm season. In winter, frost is seldom seen; and the climate, in every respect, throughout this period, is perhaps unsurpassed by any in the world. The prevailing diseases have been diarrhœa, dysentery, and slight bilious affections, attributable rather to imprudence, the relaxing influence of a warm climate, and the water, rather than to any miasmatic origin. The bilious attacks have invariably yielded to a mercurial cathartic, followed by oil of ricini; the diarrhœas and dysenteries to opium, camphor, and blue-mass, in connexion with a light diet.

These observations are derived from the reports of Assistant Surgeon James R. Conrad.



## FORT DALLAS.

This post, according to a brief note by Assistant Surgeon J. L. Adkins, is situated on a comparatively high bluff, near the mouth of the Miami river, and overlooking Key Biscayne bay, a beautiful sheet of water, separating the post from the sea by about three miles' distance. The soil is very light, and broken for the most part by limestone rock. The pine-barrens are composed of silicious sand, vegetable, and other matter. The hammocks are the most productive of any portion of the coast. The pomegranate, fig, orange, lemon, lime, citron, and other fruits are cultivated, blossoming and bearing the year round. The American aloe grows to a great height. Frost rarely visits this locality, and, as spring is perennial, fruits, flowers, and vegetables are always present. The temperature is remarkably uniform, not exceeding a variation of  $10^{\circ}$  from summer heat the greatest part of the year; and when highest, a refreshing breeze from the ocean constantly gives a spring-like character to the atmosphere.

## KEY WEST BARRACKS,

On Key West, or Thompson's Island, about forty miles southwest of Cape Sable, and between eighty and ninety miles north of Havana, with the Gulf stream between. According to Assistant Surgeon R. F. Simpson, "the length of the island from east to west is about seven miles, with an average width of one mile and a half. The highest part of the island is not more than ten feet above the level of the sea, and at ordinary tides many parts are under water. It forms a portion of the Florida Reef, on which annually many vessels are wrecked. The greater part of the surface of the island is covered with a dense jungle, with many marshes and ponds, some of which, during the rainy season, are filled with fresh water; others with a mixture of fresh and salt water. The basis of the island is tertiary—limestone, with sand, shells, and coral. The population (1854) is about 3,000, of which 1,000 are Concks, or Bahamans, 750 negroes, and the remainder Americans, English, Irish, Germans, Portuguese, Italians, and Spaniards. The Concks are a peculiar race, speak a language difficult for a stranger to understand; they intermarry sometimes with very near relatives, are very prolific, and some of their children are horribly deformed."

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	851	479	1	563	1
Second quarter.....	835	602	5	721	6
Third quarter.....	900	887	12	985	13
Fourth quarter.....	754	440	3	583	4
Annual ratio.....	835	2,408	21	2,883	25

It appears from the foregoing data that the average annual proportion of cases of disease to the number of men was 2.88 to 1; that the corresponding ratio of deaths was 1 to 39.74, or 2.5 per cent.; and that the proportion of deaths to the number of cases treated was 1 to 114.66, or 0.87 per cent.



## FEVERS.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength .....	851		835		900		754		835				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Febris continua communis...	5	0	2	0	6	1	4	0	17	1	1 in 17	20.3	
Febris intermittens quotidiana	20	0	61	0	158	0	39	0	278	0	0 in 278	333	
Febris intermittens tertiana...	21	0	25	0	50	0	32	0	128	0	0 in 128	153	
Febris intermittens quartana...	6	0	2	0	1	0	0	0	9	0	0 in 9	10.7	
Febris remittens.....	7	0	11	0	56	0	12	0	86	0	0 in 86	103	
Febris typhus.....	0	0	0	0	0	0	0	0	0	0	0 in 0	0	
Febris typhus icterodes.....	0	0	9	2	24	9	0	0	33	11	1 in 3	39	
Total .....	59	0	110	2	295	10	87	0	551	12	1 in 46	659	

The thirty-three cases of yellow fever reported in the general abstract for this region occurred at Key West Barracks in the second and third quarters of 1854. Assistant Surgeon R. F. Simpson, in transmitting his report for the third quarter 1854, remarks as follows:

"During the past season yellow fever has prevailed as an epidemic, and has proved very fatal, not only to strangers, but to persons who have been living on the island for years. As nearly as I can ascertain, there were in the town 250 cases, and 100 deaths. In August, 1853, two soldiers were sent to this garrison from Fort Brooke, Tampa. One died of yellow fever shortly after his arrival, and the other died of the same disease in September. The first case that I can hear of in town, was a young lady who came from Tallahassee; she died in November, 1853; and from that time till April, 1854, there were a few cases, and some deaths. From April to August the disease became general. At first it was confined to the centre of the town, in the immediate vicinity of a large pond, which had been the receptacle for quantities of filth and decayed vegetable matter. Radiating from this point, it gradually spread over the whole island, attacking indiscriminately whites and blacks; being most fatal in June and July. The first case in the garrison occurred in the person of the hospital steward, who had exposed himself both to the sun and to the night air in attending the sick on the island. He sickened on the 28th of May, and died on the 1st of June, with black vomit. In addition to the thirty-three cases and eleven deaths reported as occurring among the troops, there were sixteen cases in families at the post, one of which died."

The total cases treated 49, deaths 12. Dr. Simpson expresses his belief that the disease had its origin in local causes.

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	851		835		900		751		835			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica .....	0	0	0	0	0	0	0	0	0	0	0 in 0	0
Diarrhoea .....	85	0	126	0	167	0	108	0	486	0	0 in 486	582
Dysentery acuta .....	37	0	24	1	39	0	18	0	118	1	1 in 118	141
Dysentery chronica .....	4	1	3	2	1	0	2	0	10	3	1 in 3	12
Enteritis .....	1	0	1	0	1	0	0	0	3	0	0 in 3	3.5
Hepatitis acuta .....	1	0	0	0	0	0	0	0	1	0	0 in 1	1.2
Hepatitis chronica .....	0	0	0	0	2	0	0	0	2	0	0 in 2	2.4
Obstipatio .....	33	0	23	0	33	0	14	0	103	0	0 in 103	122
All other diseases of this system .....	15	0	33	0	22	0	14	1	84	1	1 in 84	100
Total .....	176	1	210	3	265	0	156	1	807	5	1 in 161	966

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	851		835		900		754		835			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica ..	5	0	1	0	0	0	0	0	6	0	0 in 6	7
Catarrhus -----	21	0	15	0	18	0	26	0	80	0	0 in 80	95.8
Phthisis pulmonalis -----	1	0	0	0	1	1	0	0	2	1	1 in 2	2.3
Pleuritis -----	3	0	2	0	3	0	1	0	9	0	0 in 9	10.7
Pneumonia -----	0	0	0	0	0	0	0	0	0	0	0 in 0	0
All other diseases of this system -----	2	0	0	0	0	0	0	0	2	0	0 in 2	2.4
Total -----	32	0	18	0	22	1	27	0	99	1	1 in 99	118
Rheumatismus -----	21	0	22	0	21	0	16	0	80	0	0 in 80	95.8

The original reports are without comment respecting diseases of the organs connected with the digestive and respiratory systems.

## GULF COAST OF FLORIDA.

THE troops stationed in West Florida, and on the immediate shores of the Gulf of Mexico, have been much more actively employed in the field than those stationed in East Florida and on the Atlantic coast. In addition to this difference of service, which would of course tend

to increase the amount of sickness among the troops in this region, the exigencies of the service, and the special duty to be performed, rendered the occupation of sickly positions unavoidable. These facts should be considered in any deductions to be drawn from the statistics for this group of posts.

The quarterly reports embraced in the general abstract, though rendered for separate posts or forts, necessarily include the cases of sickness actually incurred in the field, as most of the field duty was performed by scouting parties temporarily absent from their permanent stations.

The positions most permanently occupied are Barrancas Barracks, Forts Brooke, Meade, and Myers. In addition to these, the troops have occupied eight temporary posts in the six years covered by the general abstract for this region.

#### MEDICAL TOPOGRAPHY AND DISEASES OF BARRANCAS BARRACKS.

By Assistant Surgeon John F. Hammond: 1854.

Barrancas Barracks is on the north side of Pensacola bay, near its mouth, in latitude  $30^{\circ} 19' N.$ ; longitude  $87^{\circ} 16' 9'' W.$ , and 30 feet above the level of the sea. It is located on a sand bluff about 25 feet high above the beach, and about 400 yards from the edge of the bay. North of it, for a mile, is a strip of sandy country timbered with pines and undergrowth of several kinds of oak. Just beyond this is the Bayou Grande, 6 miles long, and 200 yards wide opposite the barracks, running east and west, and opening into the bay three miles east of the barracks. On the west is Fort Barrancas, a quarter of a mile distant, and the country beyond similar to that just described. On the south, extending along the foot of the bluff for a mile, and about 100 yards wide, is a belt of land, always damp, and flooded in rainy seasons. A few years ago there were a number of ponds upon this belt. They have been drained by a ditch which at all times contains water. Beyond this moist strip, the beach of brilliant white sand spreads out like a sheet of snow to the water's edge. On the east is, first, the naval hospital, a quarter of a mile distant, similarly located, except that there is a little swamp behind it, as well as the moist ground in front. Half a mile east of it is a canal, which drains a large swamp that extends eastward, just north of Warrington and the navy-yard. The latter are a mile east of the barracks, and are between the beach and a large swamp, the southern half of which is imperfectly drained and cleared.

During the prevalence of the east wind, which comes directly over the swamp, the navy-yard, Warrington, and the naval hospital, and of the northeast and north winds, which blow over the bayou, it was observed that a greater number of persons were attacked by the fever, and those already sick became worse. The number of new cases very evidently diminished, and the sick improved, when the wind changed to the southeast, south, or southwest, where it came from the Gulf.

Early in July, 1853, a detachment of recruits for the navy arrived at the Pensacola navy-yard from the rendezvous in New Orleans. The 9th of the same month, five of them were admitted with yellow fever at the naval hospital in the vicinity. They were the first cases of the fever seen at Pensacola bay that season. Several of the attendants who nursed them were taken sick shortly after with yellow fever. The disease extended no further from them.

On the 24th of July, the same year, the U. S. steamer Vixen came into the harbor from Tampico, and moored alongside of the navy-yard wharf. A few days after her arrival, a white boy, ten or eleven years of age, who had for two or three successive days frequented her for the purpose of fishing from her decks, sickened with yellow fever. He slept with his little sister. She was very soon taken with the same disease. They were carried into the country. Both of them died with black vomit. These were the first cases at the bay that originated outside of the walls of the naval hospital.

Immediately after the arrival of the Vixen, a case of fracture was sent from her to the naval hospital, and the man's mattress was thrown overboard. The latter drifted to the beach, and



was picked up by a negro employed in the navy-yard. Within a day or two after he was seized with yellow fever, and died with black vomit. This was the third case that occurred, not counting those mentioned as in the hospital. All of the comrades of the man, and who were his nurses—seven or eight, or more—were taken soon after with yellow fever. The people of the *Vixen* had suffered when at Tampico, and on her passage home, with a remitting fever, which was designated by those on board the *Tampico fever*. They soon began to fill the wards of the naval hospital, and did not cease until sixty-six of them were admitted with yellow fever. In the mean time, the commodore in command of the navy-yard being sick, the *Vixen* lay at or near the yard, and the daily sea-breeze spread her effluvia through the community. The disease spread rapidly, and involved all classes in the navy-yard, and nearly the whole population without, in the immediate vicinity. A man was admitted into the naval hospital the 26th of August with yellow fever. He was placed in a ward where there had not as yet been any case of the fever. There were several other patients in the ward when he arrived. Two or three days after his arrival, three of the patients of the ward sickened with yellow fever. The man nearest on his right, and the man nearest on his left, were the first of those taken. It was observed that the earliest to take the disease in the hospital were the attendants or nurses of the sick—those who came more frequently and more closely in contact with them.

The 17th August a discharged soldier was brought from a drunken debauch in Warrington—a suburb of the navy-yard, peopled by its civil employees and their families—to the military hospital at Barrancas Barracks. He appeared to have delirium tremens. He was subject to it. He soon became comatose, and died a few hours after. He turned very yellow after death. It was a case of yellow fever, and it was the first that was at Barrancas. His companions in the last debauch were men of the crew of the *Vixen*. Several of them attended his funeral.

The occurrence of the fever so late at Barrancas might be attributable to the little intercourse of its residents with those of other places, due to the warmth of the sun, and the deep, heavy, sandy soil.

A day or two after the death of the man last mentioned, a case of obstinate quotidian intermittent fever occurred in a house beside the hospital. And about the same time the only two patients in the ward where he died (both had syphilis) were seized with fever—one with a light remittent, the other was ephemeral. The 21st of the same month the men at the barracks began to sicken with the yellow fever, and from that time it gradually spread through the command and the neighborhood.

The attendants in the hospital were so uniformly taken sick with the fever a short time after entering upon their duties, that, in the end, the greater part of the command had been attendants. Not one of them escaped it.

A watchman at the navy-yard, a recently discharged soldier, was taken sick with the fever in August. Several of his late comrades at the barracks visited and nursed him. He died with black vomit. It was a virulent case. All who nursed him sickened with the fever, and several of them died with black vomit.

Of the command at Barrancas, but seven men escaped the epidemic. Of the latter, one (a sergeant) had the yellow fever in Charleston, S. C., in 1839; one "had a severe fever in New Orleans, the summer of 1847;" two had the yellow fever in Vera Cruz, in 1848; one was stationed at a fortification, (Fort Macree, three miles distant from the barracks,) and was at no time with the sick; another was the company cook, and in every way exposed to the malaria; and another resided at a distance from Barrancas, and, notwithstanding he was somewhat exposed to the weather, and had occasional intercourse with the sick, escaped. Several of the men who had kept away from the sick escaped the disease until late in the season, when the general sickness required them to be detailed as attendants.

If there were epidemic peculiarities, they were, probably, greater tendency to early stupor, and to congestion of the bowels and dysentery, with discharges of blood; earlier gastric irrita-

bility; the disease less tractable after the early part of the first stage; earlier and more delirium; and intolerance of loss of blood. It attacked equally all classes—creoles and other natives of all ages, and residents of many years; except the negroes, among whom it was less fatal. No instance was observed in which it occurred in a person who had had the yellow fever before. It did not run its course very quickly. The earliest death remarked was seventy hours from the commencement of the attack. It reached the maximum the fifth day, generally, and death occurred the seventh or eighth day. As an epidemic, it swept like a tempest through the people—sudden, short, terrible in its effects.

The apparent contagiousness of the disease was a subject of general remark, and not a question. Eruptions upon the lips, and sometimes boils and carbuncles—as is the case in all malarious fevers, attended by abatement of the fever—were so constant as to entitle it to be called an eruptive fever. There might be little impropriety in placing all the malarious fevers in that class. It may be that during the epidemic this season, there was a mild form of typhus fever running its course at the same time with the yellow fever, lending its contagiousness; or, which is most apt to be the truth, that its contagiousness was apparent because it was more malignant than was ever observed here before, and that the contagiousness of all malarious fevers is in proportion to their general malignancy, or the concentrated state of the cause of the disease. The portability of yellow fever should not be questioned.

The attack was preceded for two or three days by depression; chilliness; constipation; the appetite not much impaired. The patient usually attributed the attack to cold he thought he had caught just previously. It began, generally, before day-light in the morning. The patient was benumbed; had shiverings; pain of head; loss of appetite; no thirst; perhaps a little nausea. If his feet were placed in warm water about 8 o'clock, A. M., reaction would speedily take place; the surface become hot; the face flushed and tumid; the pulse frequent and moderately full; the tongue slightly furred, white, moist; pain of head severe, extending down the back of the neck, and felt as if caused by a fluid poured down the vertebral canal; a burning sensation in the eyes; intense pains in the small of the back; thirst; nausea; vomiting; constipation; the urine deeply colored. Not many hours afterward, the surface would become dingy; the eyes much injected, and the balls painful; thirst increased, but never intense: frequent vomiting. Sometimes the last did not occur until near the end, when, without any apparent premonition to the patient, the black vomit would spirt out, perhaps into the face of the attendant. The pharynx would become sore and painful; the eyes and skin yellow; the tongue moist on the edges, dark brown and dry in the centre; indifference to objects around him, or intolerance of visitors and noise; delirium; urine scant, and of a brown color; hemorrhage from the gums or nose; black vomit; bloody discharges from the bowels; coma, or convulsions; death. In the cases that recovered, there was almost invariably an eruption about the lips, and boils and small abscesses (sometimes carbuncles) over the body at a later period. The disease was regarded as of miasmatic origin, and treated accordingly. One case will serve to show the general plan of treatment at Barrancas, and apparently illustrate in a degree the relationship of yellow fever and intermittent fever.

An officer was taken sick the 8th of September. He had been constantly with the sick. For several days previous to the attack, he felt depressed; a sense of weight in the stomach; torpor of mental faculties, and chilliness. At first he attributed his attack to exposure the night before. He was taken with chilliness, generally; some pain in the head; the tongue nearly natural; some appetite; no thirst; nausea. He was so unwell, as to be induced, after his morning duties were finished, to take a hot foot-bath. The symptoms of the early stage of yellow fever, given above, were fully developed in less than an hour afterwards.

He was immediately given hydrarg; chlor; mite; sulph; quiniæ; each 20 grains. Two hours afterwards, the quinine had produced no effect on his head. Forty grains of it were then administered. At the end of six hours after the calomel was taken, an ounce of castor-oil was given him. It was vomited, and, with it, some of the quinine. An hour afterward the dose of oil



was repeated, and it was retained. Ice was given him to eat when he desired it. He was a little delirious during that night; slept none until toward morning; sweated very profusely. At the end of twenty-four hours from the foot-bath, the medicine had evacuated his bowels; the skin was soft and moist; the fever nearly entirely gone; his head was clear, scarcely any effect of the quinine on the sensorium perceived by him; tongue a little furred, white; pain of head; pain in the balls of the eyes increased; intolerance of visitors and conversation; some nausea. A blister-plaster six inches square was applied to the epigastrium, and mercurial frictions employed on the extremities; the bowels to be kept open by enemata, if necessary. No medicine was given by the mouth; nothing to eat; ice, ice-water, iced lemonade, if desired. Toward noon his fever was quite perceptible, but abated in the afternoon. During the night there was another exacerbation, which remitted again in the morning. That night (the second) excruciating torture from pains of his loins; he screamed with all his force, constantly. The relief of them was attributed, at the time, to mustard cataplasms and morphine; but it was not effected until near day-light. They did not return after that night with much intensity. The blister was dressed with mercurial ointment, and the use of the latter was continued until the gums were touched. The fever continued remitting until the fifth day, when it left him, and he was very much prostrated. He had some appetite, and was allowed to take gruel. The sixth day some light corn-batter cakes, buttered, were sent him. He ate two of them when they were warm, and they agreed with him very well. At noon he ate two more of them. They were cold, and he ate them with less care. At night he had dysentery, with bloody stools. It was immediately stopped by an opiated enema. He recovered slowly, and reported for duty, still very feeble, the seventeenth day after the attack.

It would have been better to have commenced the treatment with a general warm bath, a little more than tepid. The quinine should have been in solution, because it acts more promptly in that state. And it should have been given shortly after the calomel, in a dose of forty grains, and repeated in from two to six hours afterward, in a dose of twenty to forty grains. It should have been given in doses of two or three grains during the third twelve hours, and then finally discontinued. The quinine, when given after the first thirty-six hours, appeared to cause or increase irritability of the stomach, to induce in some cases nervous irritation resembling delirium tremens, and to produce early delirium. It and the calomel were both suspended in the above case, to guard against irritating the stomach.

The cerate of Spanish flies was used for blistering. It would have been better had some other vesicant been employed. The active principle of the fly, absorbed into the circulation, stimulates the system generally, and determines or predisposes to local inflammation in the acute stage. This is obvious in most acute diseases. It rarely fails to irritate painfully the kidneys, ureters, and neck of the bladder.

All visitors should have been excluded until the fever had ceased for twenty-four hours, and noise been prevented; and the light excluded, at the same time that the ventilation of the chamber was kept free.

He should not have been allowed to eat anything until he had *appetite*, or until after the fever ceased, and then gruel only should have been given for several days, and simple broth cautiously substituted for it. When the latter was given early, it caused dysentery that was difficult to control in several instances.

Calomel was given, at an early period of the epidemic, in doses of two or three grains every hour or two hours, during the third and fourth twelve hours. But, from its sedative action on the stomach, or indirect stimulation of it and the bowels, by its influence on the secretory apparatus of the liver, or by its modification of the blood, it seemed to cause an early tendency to black vomit, and to cause the black vomit. Mercury was not employed by the mouth after the first free evacuation of the bowels by it.

The patient, whose case is given above, recuperated very slowly. The pains of his loins continued severe for many days. They were increased by mental application. He was sen-



sible of them at all times when not asleep. But there seemed to be exacerbations of them, occurring at midday. He observed, several times, in the mornings, that he had had profuse perspiration during the preceding night. He took moderate exercise to regain his strength, without avail. At length his appetite began to fail. He was much annoyed by chilliness. And after two weeks from the time he returned to duty, he went to bed with fever. It was intermittent fever, the paroxysms occurring every night at midnight. Here was, apparently, the yellow fever gradually converted into an almost indistinguishable remittent fever, marked by the exacerbations of the pains at midday, and the sweats observable in the morning, which doubtless followed an exacerbation at midnight, and finally running into an intermittent fever, rendered more perceptible by some accidental cause. It became severe. The tongue was heavily coated, white; there was much irritation of stomach; great thirst, and nausea; severe pain in the head, the eyeballs, and small of the back. A general warm bath was employed, calomel and castor-oil given, a blister-plaster was applied to the epigastrium, and fifty grains of quinine, in ten-grain doses, administered in the course of forty-eight hours. The fever disappeared, and the stomach regained its integrity. But the blister was followed by a crop of fifteen or sixteen carbuncles on the epigastrium, with sloughs from two to twelve lines in diameter. They were very painful, and matured and healed slowly. The fever returned with a chill several times afterward, and there was a tendency to return again and again.

This case affords a fine instance of yellow fever. Its subsidence through the different forms of miasmatic fever, as the cause was removed, not to say eliminated, and as circumstances permitted the latter to produce a sensible effect, is perceptible; and the peculiar influence of sulphate of quinine in malarious fevers is evident. The tendency of the fever to return in an intermittent form was observed in many of the other cases of yellow fever that recovered. There was one case which recovered after the occurrence of the black vomit. The subject was a man of medium size; bilious temperament; age about 24 years; native of Virginia; a soldier. He was seized with the fever in the midst of a drunken debauch, in Pensacola, the 26th of August. The fever was obviously lessened by quinine, given early; but it returned. His skin and eyes were deeply tinged yellow as early as the third day. At the same time, there were symptoms of nervous irritation—tremors. The fourth day the tremors were excessive, and there was some delirium. The fifth day he was quite delirious, and excessively tremulous. This continued more or less until the seventh day. Until that time, from the second day, he was, when seen at the usual visits, in a profuse sweat. The seventh day the skin became dry, the tongue brown and dry, and the delirium constant. He was placed in a general warm bath. Shortly after he was removed from it, his pulse was reduced; skin quite moist with perspiration; intellect decidedly more clear. He slept comparatively well that night. The eighth day his mind was quite collected; skin moist; tongue had lost its dryness; and he asked for something to eat. A little gruel was given him. At the regular evening visit, at 9 o'clock, his mouth, shirt, and bedding were stained with recent black vomit. He said he "had been vomiting some blood;" but he seemed unconscious of his danger. The tincture of the muriate of iron, and a little sulphate of quinine, were given him through the night. His pulse rose the succeeding night at the same hour that the vomiting occurred the night previous, but the vomiting did not ensue. He very slowly recovered. During the convalescence he was much annoyed by boils and little superficial abscesses.

#### FORT BROOKE.

[From quarterly reports of Surgeon A. N. McLaren.]

Fort Brooke is located at the head of Tampa bay, near the mouth of Hillsboro' river. The hospital, situated on an elevated piece of ground in the immediate vicinity of the river, is handsomely encircled by a small grove of live-oak trees, which not only adds to its beauty, but at the same time affords a cool refreshing shade to the invalid. The general aspect of the country is low and level. The drainage is good. This post is generally healthy; but in some years,

when the interior of the country has been flooded and afterwards dried by a tropical sun, severe forms of intermittent and remittent fever prevail. This is especially the case when the wind is E.N.E. from the interior. During the Florida war, the principal general hospital was established here.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT MEADE.

By Assistant Surgeon Jonathan Letherman: 1852.

Fort Meade, Florida, is a cantonment situated forty-six miles, in a southeasterly direction, from Tampa, Florida. The Talakehopko (Peas) river, a stream from forty to fifty yards wide, runs in a course nearly south, about a mile east of the post. The station is upon an elevated piece of ground, upon all sides of which is a gentle descent. The country being generally low and flat, this elevation, though slight, is higher than any portion of the land for many miles to the west. The spot upon which stands the post is in a belt of land from seven to eight miles in width and many miles long, running northeast and southwest, the timber of which, except upon the streams, has for the most part been killed. The pine trees, which in this, as in the greater part of the State, constitute the principal portion of the timber, have died, from some cause unknown—most probably from the ravages of some worm or insect. They are stripped of their sap-wood, and, being blackened and partially burned by the fires which annually sweep over the country, cause this portion to present an unusually dreary and barren appearance. Young pine and small oak trees are again growing in this space.

The banks of the river and all the streams are skirted on either side with a thick and luxuriant growth of trees, bushes, and vines. These are called low hammocks, in contradistinction to the hammocks which are found upon the Kissimmee river, and thence to the eastern coast. The latter are higher than the land around, and are dry. The former are lower, and are often overflowed during the summer. These low hammocks consist of a large growth of cypress, magnolia grandiflora, oak, and hickory trees; underneath is a rank and luxuriant vegetation, vines, palmettoes, and bushes rendering them almost impenetrable. In the hammock on the river, near the post, is a grove of sour orange trees, which bear abundantly.

The aspect of the country from Tampa to within twenty miles of the river Kissimmee presents an entirely different appearance from what it does from the latter point to Fort Capron, on Indian river. The former is higher, and the country more rolling—if the term can be applied to such slight elevations as are there seen; the latter low and flat, and, east of the Kissimmee, so entirely overflowed by water during the summer as to be wellnigh impassable. The whole country from one coast to the other is interspersed with numerous marshes, some of which are dry during the winter.

Away from the banks of the streams, pines are the principal timber; a tough, wiry grass, with a round blade, and some palmettoes, constitute the principal undergrowth. Upon the low grounds bordering many of the streams, a rank grass, with a broad spear-shaped blade, grows luxuriantly.

Sand, mixed with a small portion of vegetable matter, constitutes the soil of the greater portion of the country. The proportion of vegetable matter is much greater upon the banks of the streams. A few feet beneath the surface, near the post, is found a mixture of sand and clay. The sand is insoluble in sulphuric, nitric, or muriatic acids; it is not affected by them in any manner. Organic remains are found in the river, which runs near this post—in its bed and upon its banks. I have in my possession a remain, which is evidently a portion of a tooth of some huge animal, which I picked up from the bottom of this river, while stationed at Fort Chokonikla (twelve miles south of this post) in the summer of 1850. Other remains are found, but whether vegetable or animal I am not able to determine. The water is so discolored, and the river so deep during and long after the rainy season, that it is impossible to obtain any specimens. A list of the flora is herewith transmitted; the greater portion I have noted from personal observation. It does not comprise the entire flora, but the principal and



great majority are there noted. A list of the fauna is also transmitted: this is also made out principally from personal observation. The list is as nearly complete as I am able now to furnish. By a reference to the meteorological table, it will be perceived that the winter of 1851-'52 was an exceedingly cold one for this latitude; the formation of ice being no uncommon occurrence. Officers and men suffered much from the cold; the quarters being entirely inadequate for their protection. The buildings are very inferior; those of the men are no more than sheds, which afford but little protection from the rain or cold. Being placed upon posts several feet high, and situated upon the highest ground in the vicinity, and no trees of any size near, they are necessarily much exposed to the winds, which frequently, during the winter, blow strong and cold. Did these buildings turn the rain, they would be comfortable during the summer; but during the winter they are utterly insufficient to afford proper shelter from the inclement weather. The quarters of the officers are but little superior to those of the men; they do not turn the rain, and give little protection from the cold. The quarters of the men have, however, been somewhat improved of late, but they are still very inferior. The weather is oppressively warm just previous to the opening of the rainy season, which occurs in the latter part of May, or first part of June. Rain falls almost daily from this time until some time in September; and sometimes so abundantly as to render the country almost impassable from the great quantity of water.

For nine months of the year the climate in the interior is, for the most part, enervating, producing a feeling averse to exertion, of relaxation of the whole body, which is trying to any constitution. The warmth and moisture during the summer produce, upon exertion, a sense of exhaustion, greater or less in proportion to the amount of exercise: which, to say the least, is very unpleasant, and which sometimes has required remedies for its removal. The invigorating effects of the sea-breezes are not felt. Should the health of the troops be considered, it would be advisable to have them stationed upon the coast during the hot and wet weather of the summer.

An examination of the hospital register from January, 1851, to September, 1852, both months inclusive, shows that the preponderance of cases of fevers occurred during the third quarter of the year. An exception is found in the third quarter of 1851, but the fourth quarter of that year having the greater number of cases, the exception is only apparent. A change of troops, garrisoning the post, took place during the first part of October of that year. The troops that relieved those who had previously been stationed here, had suffered much from fever here in 1850, were removed to Fort Myers, and came to this post from that place, where they had also suffered from fevers. Had they been stationed here continuously, they doubtless would not have made an exception.

During the summer of 1850 sickness prevailed here to a great extent. This, I doubt not, was owing to the position which the camp (as it then was) occupied. This position was upon the low ground upon the bank of the river, enclosed upon three sides by a hammock formed by that of a small stream joining that of the river. This space is covered by a thick growth of small pine and small oak trees. The wind is almost debarred access to it, except when it comes from a northerly direction, which it seldom does during the summer. When stationed here in November, 1850, I suggested to Lieutenant Morris, 1st artillery, commanding the post, the disadvantageous position of the camp in reference to the health of the troops, and suggested the propriety of having it removed to the rising and open piece of ground which the post now occupies. I supposed the spot upon which the camp was then pitched gave rise to malaria (cryptogamia?) abundantly; that, as it was so enclosed by hammocks, the air must necessarily be confined, and the malarious influence must be more concentrated. There has been an evident decrease in the number of cases of fever since the position has been changed. I have not the data, however, for making an exact comparison between the summer and autumn of 1850 and that succeeding.

The register shows that intermittent fevers prevail to a considerable extent. They vary in intensity, from the mildest and slightest to the severe and prolonged paroxysm; all, however, thus far, have been amenable to treatment. Irritability and inflammation of the stomach are

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very frequent concomitants in this form of fever—scarcely a case occurring in which one or the other of these states of this organ is not present. Chloroform I have found to be the most successful remedy, in doses of ten to thirty drops in a little water, for allaying the irritability. In inflammation of the organ, it has not been found useful, either in allaying the inflammation, or in checking the vomiting, which here, as elsewhere, so constantly attends this condition. This remedy I have used as a preventive of the paroxysm of this form of fever, in doses of ten to thirty drops, but have not seen the beneficial effects which I was led to expect from the accounts given of it in medical journals. I used it only in some mild cases, and, not being pleased with its effects, tried it in no others. Piperin I have also used as an anti-periodic, in doses of from five to ten grains, but it did not answer the purpose; in the few cases in which it was administered, it produced no visible effect, and they were mild in their character. Arsenical preparations I have seldom used. Of the remedies administered, sulph: quiniæ has been the only one in which reliance could be placed as an anti-periodic. So far as I can place confidence in my experience in treating intermittent and remittent fevers in the interior of this country, little trust can be reposed in small doses of this salt. In doses of five grains it may prevent the recurrence of a mild paroxysm, but no certainty can be looked for; and, as the tendency of these paroxysms seems to be to increase in intensity with each successive fit, I have not deemed it prudent to allow an attack of fever to run on, to have a second paroxysm to occur in a case presenting complications, or in one severe, if it could be prevented. From ten to thirty-five grains are commonly given, from an hour to an hour and a half previous to the expected paroxysm. For more than a year I have used tartaric acid to aid in the solution of this salt, and have been well pleased with its action. In the proportion of one part of the acid to two of the salt, a perfectly clear solution is speedily obtained; still possessing, however, the characteristic bitterness of the salt. Mercurials, in some form or other, are required in most of the cases. This season, care is requisite in the administration of calomel, as it seems to act with great readiness upon the salivary glands.

Remittent fevers have presented no unusual characters, and have thus far yielded to the treatment required for intermittents, modified and adapted to each case. And here I may add, that although the treatment of diseases has been conducted upon the general plan that experience has found useful, yet each individual case has been treated in a manner considered suitable for itself. Relapses in both these forms of fever are continually occurring. This is but to be expected, when men, upon leaving the hospital, undergo the same exposure, and are required to attend to the same duties, as they were previous to the first attack.

The only case of dengue which occurred at this post, although a severe one, yielded readily to large doses of sulph: quiniæ, with tinct: opii. Dysenteries and diarrhæas have been of frequent occurrence, yet possessed of no endemic or epidemic characters. One case of chronic diarrhæa proved fatal. This one was doubtless induced by the long-continued use of spirituous liquors. Upon examination after death, the colon, from the ilio-cæcal valve to the rectum, was found to be one mass of disorganization—greatly thickened, ulcerated, perforated, and almost putrid. The only matter for surprise was, how the patient could have survived so long with his intestines in such a disorganized condition; the immediate cause of death being peritonitis, induced by perforation of the bowels, with extravasation of a portion of its contents. In a case of delirium tremens, very protracted and severe, opiates in large and frequently-repeated doses, alone, and combined with stimulants, entirely failed to give relief; chloroform was given in drachm doses, and produced the most happy effects; and so speedily, as not to leave a doubt upon my mind of its being the agent. In another case it failed. So long as the patient's stomach seemed to have a perception of it, and other remedies, he progressed gradually towards recovery; but an imprudence in the use of stimulants, just as the case had taken a favorable change, seemed to render the stomach and system insensible to any remedy, and the case terminated unfavorably. Notwithstanding the failure of recovery in this case, chloroform in this disease, I think, merits a favorable consideration.

Of other diseases, there has been nothing, either in symptoms or treatment, requiring any particular notice.

The diminution of cases of fever here, since the removal of the post from the low ground upon the bank of the river, suggests the supposition that the cause thereof has acted with more virulence at that place—has been of a more local character. So far as I am aware, and I have been stationed at several posts in the interior, camps upon the banks of streams are more generally liable to fevers than elsewhere. The higher grounds at some distance from the streams are not, however, entirely free, and sometimes (as at Fort Chokonikla, in 1850) were so infected by these diseases as to render their abandonment necessary. The cause of these malarious diseases can scarcely be said to be local in the interior of this portion of the State: for although in some places it acts with greater virulence than in others, yet so generally is it spread throughout the country, that no place can be said to be free from its influence. The propriety of stationing troops upon the sea-coast again suggests itself, especially during the hot weather.

There are no inhabitants in the immediate vicinity of this post. Those that live in the interior are afflicted with intermittent and remittent fevers as the chief diseases; intermittents prevail principally. So common are they, that the expression "he has the fever" conveys at once the idea of fever and ague. "Dirt-eaters" are said to be not uncommon. I have seen no one in the act of gratifying this morbid propensity; yet the sallow countenance, the tumid abdomen, and the impression vividly conveyed of premature senility, suggest at once malaria and clay. The common remedy is said to be whisky or cider in which nails have been steeped.

Indians not being permitted to trade at this post, I have not seen one since I have been stationed here, and am therefore unable to give any account of the diseases which prevail among them, or the remedies therefor.

The hospital of this station has one large room for the sick of all diseases. Its situation is very ineligible, being nearly a mile from the post, upon the low ground near the river, upon the outskirts of the old camp. Apart from the inconvenience, which is great, of having it at such a distance from the post, it is more exposed than any other building to malarious influence. Instead of being in the most healthy and otherwise eligible position, it is just the reverse. The attendants are frequently attacked by malarious diseases—some quite severely; and patients in hospital, from injuries and diseases other than those of malarious origin, are attacked, and that repeatedly.

The following is a list of trees, vines, &c., found in the vicinity of Fort Meade, Florida:

*Trees.*—Yellow pine, pitch pine, magnolia grandiflora, wild cherry, wild plum, sweet orange, sour orange, sweet bay, hickory, black oak, swamp oak, cypress, palmetto (cabbage-tree), sweet gum, hawthorn, persimmon, dogwood, maple.

*Vines, &c.*—Tree moss, yellow jasmine, trumpet-creeper, wild grape, coral honeysuckle, passion-flower, blackberry, dewberry, dew-plant, poison-vine, whortleberry, prickly pear (cactus), lily, violet, saw palmetto, fern.

The following is a list of animals, birds, reptiles, and insects found in the vicinity of Fort Meade, Florida:

*Animals.*—Deer, panther, black bear, wild cat, black wolf, grey wolf, fox, opossum, otter, skunk (pole cat), raccoon, rabbit, grey squirrel, fox squirrel, mole, mouse.

*Birds.*—Wild turkey, rice-bird, snipe, dove, turtle-dove, ducks (various kinds), white curlew, Spanish curlew, sand-hill crane, blue crane, white crane, paroquet, mocking-bird, blue jay, martin, ivory-bill woodpecker, common woodpecker, blue bird, sparrow, sparrow-hawk, fowl-hawk, fish-hawk, quail, turkey-buzzard (two kinds), crow, lark, robin, red bird, whip-poor-will, owl (two kinds), night-hawk, yellow bird, yellow-hammer, tomtit, swallow, blackbird.

*Insects.*—Tarantula, scorpion, centipede, mosquito, flea, gad-fly, common fly, sand-fly, gnats, roaches, crickets, honey-bee, humble-bee, butterfly (several varieties), wasp, locust.

*Reptiles, &c.*—Rattlesnake, ground rattlesnake, water-moccasin, land-moccasin, copperhead, king-snake, black viper, black snake, whip-snake, gopher-snake, alligator, lizard (several kinds), chameleon, gopher, terrapin, soft-shell turtle, tree-frog, bull-frog, frog.



## FORT MYERS,

Is near Charlotte's Harbor, on the left bank of the Caloosahatchee river, about nineteen miles from its entrance into the Gulf of Mexico. No report of its topography can be found. The position is extremely insalubrious; fevers and dysenteries being more rife here than at any other station in Florida. This post would long since have been abandoned, had not special military considerations demanded its maintenance.

## DISEASES.

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	2,299	2,019	6	878	2.6
Second quarter.....	2,505	2,728	15	1,089	5.9
Third quarter.....	2,014	2,830	27	1,405	13.9
Fourth quarter.....	2,379	2,685	22	1,128	9.2
Annual ratio.....	2,299	10,262	70	4,463	30.4

The relative proportion of cases of sickness to the number of troops in this region was 4.46 to 1, and the corresponding ratio of deaths 1 to 32.84, or 3.04 per cent. The ratio of deaths to the number of troops was 1 to 146.60, or 0.68 per cent.

## FEVERS.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength -----	2, 299		2, 505		2, 014		2, 379		2, 299				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Febris congestiva -----	0	0	0	0	0	0	1	0	1	0	0 in 1	0.4	
Febris continua communis -----	1	0	5	0	5	0	4	1	15	1	1 in 15	6.5	
Febris intermittens quotidiana -----	287	0	777	0	848	0	849	0	2761	0	0 in 2761	1200	
Febris intermittens tertiana -----	582	1	346	0	322	0	455	0	1705	1	1 in 1705	742	
Febris intermittens quartana ..	18	0	2	0	5	0	41	0	66	0	0 in 66	28.7	
Febris remittens -----	48	0	110	0	231	0	100	2	469	2	1 in 245	212	
Febris typhus -----	3	0	3	1	6	1	2	1	14	3	1 in 5	6	
Febris typhus icterodes -----	0	0	2	0	30	12	12	9	44	21	1 in 2	19	
Total -----	939	1	1245	1	1447	13	1464	13	5095	28	1 in 182	2216	

As will be seen by the consolidated abstract and the foregoing table, fevers occupy the most important position among the diseases of this region. It is proposed, therefore, to give extracts from the remarks in regard to this class of diseases appended to the quarterly reports of sick and wounded.



Yellow fever is reported twice at Fort Brooke—once in September 1849, and again in 1853—and once at Barrancas Barracks, in 1853. In 1849, only three cases occurred, all proving fatal. Assistant Surgeon Laub shows conclusively that the disease was contracted by the three men at New Orleans. They sickened on the passage from that city to Fort Brooke. In the summer of 1853, fifteen cases occurred at that post, of which nine died. No history of the disease has been given. The epidemic of that year, as it affected the troops at Barrancas Barracks, is described in the report of Assistant Surgeon Hammond, in connexion with the topography of that post. (*Vide p. 325.*) In this connexion, the following remarks of Assistant Surgeon E. H. Abadie, respecting a fever which prevailed at Barrancas Barracks in the summer of 1846, are of interest:

“The health of the command at Fort Pickens and this place has been good during the quarter, in comparison with that of the camp followers and their families left behind by the companies of this regiment in Mexico, as also that of the officers’ families living here, but one of which has escaped an attack of the prevailing disease—a pernicious intermittent and remittent fever. This disease commenced with us about the beginning of August, attacking with little apparent violence, attended from the first with great tendency to congestion of the different important organs, more generally the liver, alimentary canal, and brain. The individual attacked appeared as if poisoned; the blood being changed in its character, dissolved and unnatural in appearance when drawn, resembling the dregs of claret in water, coagulating imperfectly. Stimulation had to be used from the commencement; and when depletion had to be employed, it was practised by cups, from such parts as were the most threatened with disorganization. The treatment pursued had to be purely eclectic, meeting the symptoms as they appeared. Powerful counter-irritation to the surface by means of hot spt: terebinth frictions, followed by the application of sinapisms, so as almost to cover the whole body with them, were indispensable, and were attended with signal benefit. The sheet-anchor of the treatment being large doses of quinine and calomel to re-establish the secretory functions, which were entirely arrested from the beginning of the attack. The dejections from the stomach, vomiting being usually present, consisted of a colorless, glairy fluid in some cases; in others, dirty green or brown flocculi were suspended in it. The discharges from the bowels presented somewhat the same appearance, being generally watery, of a dirty black color, the more consistent portion of the stool being very fetid, falling to the bottom of the vessel in a pulverulent form. During the fever the liquor ammon: acetat: with mist: camph: and spt: nitr: dulc: was well borne and did much good. Before the termination of the paroxysm, which was usually by the most profuse cold sweats with very frequent and almost imperceptible pulses, quinine in ten-grain doses was given with great benefit; the pulse becoming fuller and less frequent, the sweat more natural. The doses were repeated in intervals of from 3 to 5 hours, arresting the paroxysm if the calomel, which had been continued in repeated doses at the same time, had succeeded in restoring the suspended secretions, which was manifested by the appearance of copious bilious stools, or large dejections of a dark, tarry nature. The type of the fever was at first intermittent, generally a double tertian, the first paroxysm only being attended with slight rigors; the occurrence of the paroxysm being very irregular, mostly at night; the intermissions very short, there being none perceptible, in some cases, for the first three days of the attack. In September the fever assumed the remittent type; the septic effects of the miasmata being more striking, the congestion less susceptible of relief. In children under 5 years, in three cases out of five, the disease was ushered in by apoplexy or effusion on the brain, one side of the body being completely paralyzed, whilst the other was thrown into spasmodic contractions.

“Fifty-six cases of disease, including a few relapses, have been treated, occurring in the families of the officers and soldiers entitled to medical attendance. I would call the attention of the department to the importance of removing the evident cause of the sickness at this place, when barracks are being built by the government for a regiment. My predecessor has indicated the cause, and suggested the removal of it, by draining the fresh-water ponds that are found at the foot of the sand-hill upon which the cantonment is built. These ponds are supplied by the fil-

tering of the rains that fall, and probably, also, by springs in the sand-bank. The grading of the ground from the base of the hill to the sea-beach would prevent the accumulation; or a ditch or canal might be cut, at little expense, to conduct the water to the sea, so as to convert the stagnant pools into running water."

The original records show that the summer of 1850 was the most sickly one for the troops at Fort Meade; in other seasons, that post has been comparatively healthy. In the months of July, August, and September, of that year, out of a command averaging 188 persons, there were 171 cases of intermittent and 65 of remittent fever reported. For explanation of this fact, reference is made to the preceding report of Assistant Surgeon Letherman.

Fort Myers, the most southern point on the Gulf coast occupied by troops, has proved the most sickly. The following remarks from the quarterly report of Assistant Surgeon W. J. Sloan, for the 3d quarter, 1851, shows the prevalence of fevers at this post:

"The continued and increasing sickness at this post during the quarter has been most discouraging, and has had a melancholy influence upon every one. Intermittent fever has prevailed to an extraordinary extent, ever varying in its complications, and producing every species of gastric, hepatic, and cerebral disturbance. It is almost wholly of the quotidian type, and most obstinate in its character. The whole command has suffered, and there is not a healthy-looking man present, nor one capable of making a good day's march. These cases are most varied in their onset. Some are attacked with the most violent rigors; others escape this stage. Some are complicated, with great cerebral disturbance; others with congestion of the liver and spleen, and become jaundiced in a few hours. Some, again, are seized with violent spasmodic contractions of the muscles of the inferior extremities, or symptoms of cholera morbus, which disappear on the accession of the fever. There have been a few cases of congestive intermittent with difficult reaction, and a few exhibiting a typhoid tendency. The quinine used in treatment appears to be of inferior quality and adulterated.

"The exciting causes of fever have been abundant. The constant, drenching rains, and the rays of a scorching sun, have had their full effect upon men exposed to their influence while building quarters for their own protection and that of public property. The provisions issued to the troops have also been of bad quality—at least since I have been here. The flour has been sour or musty, and filled with insects; the pork has been scarcely fit for issue; the rice is destroyed by weevil, &c.; and vegetables have failed almost entirely, from the impossibility of gardening during the rainy season. The supply of fresh beef is at present exhausted; but this is a temporary misfortune, and will soon be remedied. I sincerely hope to be able to report an improved state of health at the expiration of the next quarter."

In order to present a more definite idea of the extent to which this command suffered from fevers, the following statistics have been collated from the original reports:

*Table showing the sickness and mortality from fevers at Fort Myers, Florida.*

Quarters.	Mean strength.	Cases treated.	Deaths.	Quarters.	Mean strength.	Cases treated.	Deaths.
1851.				1852.			
First quarter.....	156	96	-----	Fourth quarter.....	137	368	-----
Second quarter.....	134	198	-----	1853.			
Third quarter.....	116	240	-----	First quarter.....	134	341	-----
Fourth quarter.....	110	234	-----	Second quarter.....	125	234	-----
1852.				Third quarter.....	116	126	-----
First quarter.....	98	136	-----	Total.....	1,406	2,427	-----
Second quarter.....	141	204	-----	Ratio per quarter..	128	221	-----
Third quarter.....	139	250	-----				



Quarters.	Mean strength.	Cases treated.	Deaths.
1853.			
Fourth quarter.....	101	39	-----
1854.			
First quarter.....	71	34	-----
Second quarter.....	135	37	-----
Third quarter.....	137	66	-----
Fourth quarter.....	138	40	-----
Total.....	582	216	-----
Ratio per quarter.....	116	43	-----

It is important to remark, that during the years 1851, 1852, and for the first three quarters of 1853, the command at Fort Myers consisted of companies of the 1st regiment of artillery, which had previously been broken down by disease at Fort Meade. In the fourth quarter of 1853, they were relieved by companies of the 2d artillery from the north. For the first command, it will be observed that the ratio of this class of diseases to the number of men was 1.72 to 1 per quarter, or 6.90 to 1 per annum: so that each person was sick with fever about *seven* times in a year. For the second command, the very great diminution in the number of cases cannot fail to be observed. In this, the ratio per quarter falls to 0.37 to 1, or 1.48 to 1 per annum.

So far as the statistics of this post afford the means of judging, the evidence is strongly in favor of frequently changing troops from sickly to healthy stations. Indeed, the mass of evidence tends to the conclusion, that troops from the north resist in a very great degree the active causes of intermittent and remittent fevers during their first summer at the south, and that soldiers long continued at unhealthy stations become more sickly and unfit for duty each succeeding year.

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters.-----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength-----	2, 299		2, 505		2, 014		2, 379		2, 299				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Cholera Asiatica-----	0	0	1	1	0	0	0	0	1	1	1 in 1		
Diarrhœa-----	222	2	305	1	224	4	252	1	1003	8	1 in 125	436	
Dysentery acuta-----	64	1	90	4	59	0	122	1	335	6	1 in 56	145	
Dysentery chronica-----	3	0	11	4	7	2	5	0	26	6	1 in 4.3	11.3	
Enteritis-----	1	0	1	1	5	2	1	0	8	3	1 in 3	3.4	
Hepatitis acuta-----	2	0	4	0	3	0	3	0	12	0	0 in 12	5.2	
Hepatitis chronica-----	2	0	3	0	0	0	1	0	6	0	0 in 6	2.6	
Obstipatio-----	42	0	91	0	77	0	71	0	281	0	0 in 281	122	
All other diseases of this system-----	61	1	84	1	74	0	52	0	271	2	1 in 135	117	
Total-----	397	4	590	12	449	8	507	2	1943	26	1 in 75	845	



It will be noticed that the proportion of cases of dysentery above reported is relatively large. Assistant Surgeon Guild, in a recent report from Barrancas Barracks, makes the following remarks in relation to that disease:

“The treatment which I have pursued in acute dysentery has been invariably to premise with minute doses of sulphate of magnesia and ipecac, administered at intervals of six hours in some simple aromatic water—a plan of treatment first adopted, I believe, by Heberden. The action of this remedy is that of a local depletive to the inflamed intestinal surface, and, under its influence, the acute symptoms ordinarily abate in the course of forty-eight hours: after which, the case only requires abstemious diet, with opiates or astringents, to insure a speedy and permanent recovery. This plan of treatment of acute dysentery I have pursued exclusively for several years, and not a single uncomplicated case of the disease has terminated fatally, or in a chronic form. Being satisfied of its efficiency, I have deemed it not improper to mention it thus briefly in my report.”

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength .....	2, 299		2, 505		2, 014		2, 379		2, 299				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Bronchitis acuta et chronica..	10	0	3	0	3	0	16	0	32	0	0 in	32	14
Catarrhus.....	46	0	51	0	59	0	51	0	207	0	0 in	207	90
Phthisis pulmonalis.....	3	0	3	1	7	1	3	1	16	3	1 in	5	6.9
Pleuritis .....	4	0	3	0	3	0	7	0	17	0	0 in	17	7.3
Pneumonia .....	3	0	1	0	2	0	4	0	10	0	0 in	10	4.3
All other diseases of this system .....	16	0	10	0	4	0	5	0	35	0	0 in	35	15.2
Total .....	82	0	71	1	78	1	86	1	317	3	1 in	106	137
Rheumatismus .....	54	0	59	0	50	0	49	0	212	0	0 in	212	-----

Although the reports of sick in this region are without remarks relative to diseases of the respiratory system, the high ratio of cases of phthisis pulmonalis deserves special notice. An examination of the statistics of that disease for the several regions, in connexion with the consolidated temperature and rain tables, will serve to show, in a marked degree, the effect of long-continued high temperature, combined with excessive moisture (high dew-point), in the production or development of pulmonary consumption.

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ABSTRACTS

OF THE

PRINCIPAL DISEASES AND DEATHS

OCCURRING AMONG THE TROOPS

IN FLORIDA.

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## REPORT ON THE SICKNESS AND MORTALITY

No. 1 — ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	FIRST QUARTER.														AGGREGATE STRENGTH.	
	YEARS.....	1849.	1850.	1851.	1852.	1853.	1854.									
	MEAN STRENGTH.....	51.	351.	122.	129.	134.	58.	851.								
SPECIFIC DISEASES.		Cases	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
Fevers.....	Febris continua communis.....			3		2								5		
	Febris inter. quotidiana....	2		7				11						20		
	Febris intermittens tertiana.....			5				15		1				21		
	Febris intermittens quartana.....					5		1						6		
	Febris remittens.....			1		1		3		2				7		
	Febris typhus.....															
Eruptive fevers.....	Febris typhus icterodes.....															
	Erysipelas.....							1						1		
	Rubeola.....															
	Scarlatina.....															
Diseases of the organs connected with the digestive system.	Varicella.....															
	Cholera Asiatica.....															
	Diarrhoea.....	6		44		9		18		6		2		85		
	Dysentery acuta.....	1		27		5		3		1				37		
	Dysentery chronica.....			4				1						4	1	
	Enteritis.....											1		1		
	Hepatitis acuta.....					1								1		
	Hepatitis chronica.....															
	Obstipation.....			22		2		4				5		33		
	All other diseases.....			8		2		2		3				15		
Diseases of the respiratory system.	Bronchitis, acuta et chronica.....			2				2		1				5		
	Catarrhus.....	2		1				7		9		2		21		
	Phthisis pulmonalis.....									1				1		
	Pleuritis.....					2				1				3		
	Pneumonia.....															
	All other diseases.....	1		1										2		
Diseases of the brain and nervous system.	Cephalalgia.....							1		1				2		
	Delirium tremens.....															
	Epilepsia.....			1				1						2		
	Neuralgia.....			1		1		2				1		5		
	All other diseases.....															
Diseases of the urinary and genital organs.	Gonorrhoea.....	1		2										3		
	Stricture urethrae.....															
	Syphilis primitiva.....	2												2		
	Syphilis consecutiva.....	1		2								1		4		
Diseases of the serous and exhalant vessels.	All other diseases.....			4		1				1				6		
	Ascites.....															
	All other diseases.....			1										1		
Diseases of the fibrous & muscular structures.	Permo.....															
	Podagra.....															
	Rheumatismus.....			6		3		3		8		1		21		
Abscesses and ulcers.....	Fistula.....															
	Phlegmon et abscessus.....	3		7				10		10		7		37		
	Ulcus.....			3		1		1		2		1		8		
	Ambustio.....	1						2						3		
Wounds and injuries.....	Contusio.....	3				2		5		5		2		17		
	Fractura.....			1						1				2		
	Luxatio.....															
	Sub luxatio.....			2		2		2		1				7		
	Vulnus incisum.....			12		2		1		2				17		
	Vulnus laceratum.....	2								1		1		4		
	Vulnus punctum.....			1				4		2				7		
	Vulnus sclopeticum.....					1				1				2		
	Debilitas.....			1		1				1		2		5		
	Ebrietas.....							2				2		4		
Miscellaneous.....	Hæmorrhoids.....			1				1						2		
	Hernia.....															
	Morbi cutis.....			1				3		1		1		6		
	Morbi oculi.....			1				1						2		
	Scorbutus.....			1										1		
	All other diseases.....	1		22		3		11		3		1		41		
Total.....		26		192		47	1	85		95		34		479	1	

## AMONG THE TROOPS AT POSTS ON THE ATLANTIC COAST OF FLORIDA.

CLASSES OF DISEASES.		SECOND QUARTER.												AGGREGATE STRENGTH.	
		YEARS.....		1849.	1850.	1851.	1852.	1853.	1854.						
		MEAN STRENGTH..		104.	250.	123.	154.	109.	58.					835.	
		SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
Fever	Febris continua communis .....				2								2		
	Febris inter. quotidiana .....			17	6		32		5		1		61		
	Febris intermittens tertiana. 1				8		4		10		2		25		
	Febris intermittens quartana .....								2				2		
	Febris remittens .....				6				1		4		11		
	Febris typhus .....														
Eruptive fevers	Febris typhus icterodes .....										9	2	9	2	
	Erysipelas .....	2					1		1				4		
	Rubeola .....														
	Scarlatina .....														
Diseases of the organs connected with the digestive system.	Variola .....														
	Cholera Asiatica .....														
	Diarrhœa .....	15		51		21		26		9		4	126		
	Dysentery acuta .....	7		8		2	1	3		3		1	24	1	
	Dysentery chronica .....	2		1			1			1			3	2	
	Enteritis .....						1						1		
	Hepatitis acuta .....														
	Hepatitis chronica .....														
	Obstipatio .....			5		5		6				7		23	
	All other diseases .....	3		15		2		8				5		33	
Diseases of the respiratory system.	Bronchitis, acuta et chronica .....						1						1		
	Catarrhus .....	1		4		1		8		1			15		
	Phthisis pulmonalis .....														
	Pleuritis .....	1							1				2		
Diseases of the brain and nervous system.	Pneumonia .....														
	All other diseases .....														
	Cephalalgia .....	1		3		1		1				1	7		
	Delirium tremens .....	1		2				1					4		
	Epilepsia .....	1		1									2		
	Neuralgia .....					1		1				1	3		
	All other diseases .....			3					1				4		
	Gonorrhœa .....	3		2					1				6		
Diseases of the urinary and genital organs.	Stricture urethræ .....							1			1		2		
	Syphilis primitiva .....	1					1						2		
	Syphilis consecutiva .....	2					2		1		1		6		
Diseases of the serous and exhalant vessels.	All other diseases .....	1						1		1		3			
	Ascites .....						1						1		
Diseases of the fibrous & muscular structures.	All other diseases .....														
	Pernio .....														
	Podagra .....														
	Rheumatismus .....	4		4		1		7		5		1	22		
Abscesses and ulcers....	Fistula .....														
	Phlegmon et abscessus .....	7		3		11		18		7		6	52		
	Ulcus .....	1		2		2		1				1	7		
Wounds and injuries....	Ambustio .....					1				1		1	3		
	Concussio cerebri .....					1							1		
	Contusio .....	6		8		3		4		3		3	27		
	Fractura .....			1									1		
	Luxatio .....														
	Sub luxatio .....			2		2		1					5		
	Vulnus incisum .....	1		7		4		3					15		
	Vulnus laceratum .....							1				1	2		
	Vulnus punctum .....			1		1		2		1			5		
	Vulnus sclopeticum .....														
Miscellaneous .....	Debilitas .....						1		1				2		
	Ebrietas .....			2		2		2				3	9		
	Hæmorrhoids .....	1						3				1	5		
	Herina .....			1				1					2		
	Morbi cutis .....					3		4					7		
	Morbi oculi .....	2		3				3		1		1	10		
	All other diseases .....	1		16		7		11		5		5	45		
Total .....		65		162		93	2	159		62	1	61	2	602	5

## REPORT ON THE SICKNESS AND MORTALITY

## No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DIS- EASES.	YEARS.....	THIRD QUARTER.												AGGREGATE STRENGTH.	
		1849.	1850.	1851.	1852.	1853.	1854.								
		MEAN STRENGTH .....	120.	400.	115.	159.	61.	45.							900.
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
Fevers .....	Febris continua communis.....	1	2	1	3									6	1
	Febris inter. quotidiana.....	1	107		10		30							158	
	Febris intermittens tertiana.....	2	8		7		32		1					50	
	Febris intermittens quartana.....										1			1	
	Febris remittens.....	2	47		1		2		4					56	
	Febris typhus.....														
Eruptive fevers .....	Febris typhus atetodes.....										24	9	24	9	
	Erysipelas.....					1								1	
	Rubella.....														
	Scarlatina.....														
	Varicella.....														
Diseases of the organs connected with the di- gestive system.	Cholera Asiatica.....														
	Diarrhoea.....	18	106		20		19		4					167	
	Dysentery acuta.....	9	21		2		1		6					39	
	Dysentery chronica.....		1											1	
	Enteritis.....		1											1	
	Hepatitis acuta.....														
	Hepatitis chronica.....	1						1						2	
	Obtipation.....		16		11		6							33	
Diseases of the respira- tory system.	All other diseases.....	2	8		8		1		2		1			22	
	Bronchitis, acuta et chronica.....														
	Catarrhus.....		6		4		8							18	
	Phthisis pulmonalis.....		1	1										1	1
	Pharyngitis.....	1	1			1								3	
Diseases of the brain and nervous system.	Pneumonia.....														
	All other diseases.....														
	Cephalalgia.....		11			1		1		4				17	
	Delirium tremens.....										2			2	
	Epilepsia.....	1												1	
Diseases of the urinary and genital organs.	Neuralgia.....					1								1	
	All other diseases.....	1	1	1										2	1
	Gonorrhoea.....	1	1											2	
	Stricture urethrae.....														
	Syphilis primitiva.....	1												1	
Diseases of the serous and exhalant vessels.	Syphilis consecutiva.....							1		3				4	
	All other diseases.....	1	1							1				3	
	Ascites.....														
Diseases of the fibrous & muscular structures.	All other diseases.....		1											1	
	Peritonitis.....														
	Podagra.....														
Abscesses and ulcers.....	Rheumatismus.....	4	9		2		3		2		1			21	
	Fistula.....														
	Phlegmon et abscessus.....	9	61		10		25		6		6			117	
	Fleus.....	4	8		2				1		2			17	
	Ambustio.....		1		1									2	
	Concussio cerebri.....				1									1	
Wounds and injuries.....	Contusio.....	2	19		4		3		1		1			30	
	Fractura.....						1							1	
	Luxatio.....										1			1	
	Sub luxatio.....		1		1						4			6	
	Vulnus incisum.....		6		5		1				2			14	
	Vulnus laceratum.....	1	1				1				1			4	
	Vulnus punctum.....														
	Vulnus sciopetuum.....														
Miscellaneous .....	Defectio.....		2											2	
	Ebrietas.....		1		4						1			6	
	Hæmorrhoea.....		1		2		1							4	
	Hæmia.....					1								1	
	Morbi cutis.....		1					1						3	
	Morbi oculi.....	1	4			4		2						11	
	All other diseases.....	3	11		10		8		5		2			39	
Total.....		66	466	3	108		152		38		57	9	887	12	



## AMONG THE TROOPS AT POSTS ON THE ATLANTIC COAST OF FLORIDA.

CLASSES OF DISEASES.	FOURTH QUARTER.														AGGREGATE STRENGTH.	
	YEARS .....	1849.	1850.	1851.	1852.	1853.	1854.									
	MEAN STRENGTH .....	190.	205.	110.	117.	65.	37.									
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
Fevers.....	Febris continua communis .	2				2								4		
	Febris inter. quotidiana.....	8		15		3		12		1				39		
	Febris intermittens tertiana ..	13				1		17		1				32		
	Febris intermittens quartana ..															
	Febris remittens .....	5		1				1		4		1		12		
	Febris typhus .....															
Eruptive fevers .....	Febris typhus icterodes .....															
	Erysipelas .....							1						1		
	Rubeola .....															
	Scarlatina .....															
	Variola .....															
	Cholera Asiatica .....															
Diseases of the organs connected with the digestive system.	Diarrhœa .....	14		62		11		16		4		1		108		
	Dysenteria acuta .....	9		3		1		5						18		
	Dysenteria chronica .....	2												2		
	Enteritis .....															
	Hepatitis acuta .....															
	Hepatitis chronica .....															
Diseases of the respiratory system.	Obtupatio .....			5		5				3		1		14		
	All other diseases .....	5	1	3		2		1		3				14	1	
	Bronchitis, acuta et chronica ..															
	Catarrhus .....	6		10		4		4		2				26		
	Phthisis pulmonalis .....															
	Pleuritis .....	1												1		
Diseases of the brain and nervous system.	Pneumonia .....															
	All other diseases .....															
	Cephalalgia .....			9		2								11		
	Delirium tremens .....	1												1		
	Epilepsia .....															
	Neuralgia .....															
Diseases of the urinary and genital organs.	All other diseases .....			1	1			1						1	2	
	Gonorrhœa .....			2										2		
	Structura urethræ .....															
	Syphilis primitiva .....	4												4		
	Syphilis consecutiva .....											1		1		
	All other diseases .....	4		1								1		6		
Diseases of the serous and exhalent vessels.	Ascites .....	1												1		
	All other diseases .....															
Diseases of the fibrous & muscular structures.	Permo .....															
	Podagra .....															
	Rheumatismus .....	2		4		2		5		2		1		16		
Abscesses and ulcers....	Fistula .....															
	Phlegmon et abscessus .....	5		13		3		6		3		1		31		
	Ulcus .....	3		6										9		
	Ambustio .....			1								1		2		
	Contusio .....	1		6		2						1		10		
	Fractura .....															
Wounds and injuries....	Luxatio .....	3												3		
	Punctio .....	1												1		
	Sub luxatio .....									2				2		
	Vulnus incisum .....	6		5		1								12		
	Vulnus laceratum .....															
	Vulnus punctum .....			1		1				1				3		
Miscellaneous .....	Vulnus sclopeticum .....	1												1		
	Debilitas .....									1				1		
	Ebrietas .....					1				1				2		
	Hæmorrhoids .....					1		2				1		4		
	Hæma .....	3												3		
	Morbi cutis .....			1				1						2		
Wounds and injuries....	Morbi oculi .....	2		1				1						4		
	All other diseases .....	11		18		2		5						36		
	Total .....	113	1	168	1	44		77	1	28		10		440	3	

## REPORT ON THE SICKNESS AND MORTALITY

No. 2.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	FIRST QUARTER.												AGGREGATE STRENGTH.		
	YEARS .....	1849.	1850.	1851.	1852.	1853.	1854.								
	MEAN STRENGTH .....	412.	837.	266.	228.	331.	225.			2,299.					
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total died.	Total cases.		
Fever.	Febris continua communis.									1		1			
	Febris inter. quotidiana.			31		52		144		31		23	287		
	Febris intermittens tertiana.	10		112	1	58		8		371		23	582		
	Febris intermittens quartana.	1				1		9		4		3	18		
	Febris remittens.	5		15		11		3		9		5	48		
Eruptive fevers.	Febris typhus.			3									3		
	Erysipelas.														
	Rubeola.														
Diseases of the organs connected with the digestive system.	Varicella.														
	Cholera Asiatica.														
	Diarrhoea.	25		124	1	18		18	1	21		16	222		
	Dysentery acuta.	3		35		11	1	7		7		1	64		
	Dysentery chronica.			1		2							3		
Diseases of the respiratory system.	Enteritis.			1									1		
	Hepatitis acuta.					1						1	2		
	Hepatitis chronica.	1		1									2		
	Obstipatio.	4		13		2		9		10		4	42		
	All other diseases.	8		14		14	1	8		11		6	61		
Diseases of the brain and nervous system.	Bronchitis, acuta et chronica.	1		1		1		3		4			10		
	Catarrhus.	9		18		5		2		10		2	46		
	Phthisis pulmonalis.	1				2							3		
	Pleuritis.			1		2		1					4		
	Pneumonia.			1				1				1	3		
Diseases of the urinary and genital organs.	All other diseases.	2		5		2		2		4		1	16		
	Cephalalgia.			2		2						1	5		
	Delirium tremens.	3		3		1		4		4		1	16		
	Epilepsia.	1		1				3					5		
	Neuralgia.	1		1									2		
Diseases of the serous and exhalant vessels.	All other diseases.			2						2			4		
	Gonorrhoea.	7		6						2		4	19		
	Structura urethrae.														
	Syphilis primitiva.														
	Syphilis consecutiva.	5		2		1		3		1			12		
Diseases of the fibrous & muscular structures.	All other diseases.	1				1				1		2	5		
	Ascites.														
	All other diseases.			1		1				2			4		
	Pernio.														
	Podagra.														
Abscesses and ulcers.	Rheumatismus.	18		23		2		5		1		5	51		
	Fistula.											4	4		
	Phlegmon et abscessus.	16		47		11		14		17		5	110		
	Ulcus.	8		6				5		6		1	26		
	Ambustio.			2						1		1	4		
Wounds and injuries.	Amputatio.					1							1		
	Concussio cerebri.			1								1	2		
	Contusio.	9		31		5		14		15		5	79		
	Fractura.	10		1				3		1			15		
	Luxatio.	1		2									3		
Miscellaneous.	Sub-luxatio.			3		1		3		15			22		
	Vulnus incisum.	1		27		10		3		2		8	51		
	Vulnus laceratum.					2				3			5		
	Vulnus punctum.			2		4				1			7		
	Vulnus sclopeticum.	1		1				1					3		
Miscellaneous.	Debilitas.			5		1		2				3	11		
	Ebrietas.	3		8				4		3		1	19		
	Hæmorrhoids.	3				1				2			6		
	Hæma.			2						1		1	4		
	Morbi cutis.			1				3					4		
Miscellaneous.	Morbi oculi.			7		1				2		1	11		
	Scorbutus.			1						1			2		
	All other diseases.	2		24		8		11		29		2	86		
Total.		160		601	2	235	2	293	1	597		133	1	2,019	6

## AMONG THE TROOPS AT POSTS ON THE GULF COAST OF FLORIDA.

CLASSES OF DISEASES.	SECOND QUARTER.														AGGREGATE STRENGTH.	
	YEARS .....	1849.		1850.		1851.		1852.		1853.		1854.				
	MEAN STRENGTH .....	300.		896.		276.		345.		331.		357.		2,505.		
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
Fevers .....	Febris continua communis..	1	4											5		
	Febris inter. quotidiana .....		153			154		200		257		13		777		
	Febris intermittens tertiana.	9	160			67		50		19		41		346		
	Febris intermittens quartana .....					2								2		
	Febris remittens .....	7	41			9		41		6		3		110		
	Febris typhus .....		1	1				1		1				3	1	
Eruptive fevers .....	Febris typhus icterodes .....							2						2		
	Erysipelas .....											1		1		
	Rubeola .....															
Diseases of the organs connected with the digestive system.	Varicella .....															
	Cholera Asiatica .....											1	1	1	1	
	Diarrhoea .....	48	1	174		26		28		14		15		305	1	
	Dysentery acuta .....	1	1	26		15	1	12		8		28		90	4	
	Dysentery chronica .....	1	1	2	3			1		1		6		11	4	
	Enteritis .....			1	1									1	1	
	Hepatitis acuta .....			1		1						2		4		
	Hepatitis chronica .....	2		1										3		
	Obstipatio .....	3		31		5		23		4		25		91		
	All other diseases .....	10		27	1	19		11		10		7		84	1	
Diseases of the respiratory system.	Bronchitis, acuta et chronica .....			2								1		3		
	Catarrhus .....	6		19		4				1		21		51		
	Phthisis pulmonalis .....			1	1	2								3	1	
	Pleuritis .....			2		1								3		
	Pneumonia .....											1		1		
	All other diseases .....	2		2		1		4				1		10		
Diseases of the brain and nervous system.	Cephalalgia .....	3		7		4		1		2		2		19		
	Delirium tremens .....					1		2		3		4		10		
	Epilepsia .....			1		2						2		5		
	Neuralgia .....	1		2								1		4		
	All other diseases .....			2		2	1	1						5	1	
	Gonorrhoea .....	4		4		2		1						11		
Diseases of the urinary and genital organs.	Structura urethrae .....															
	Syphilis primitiva .....			1						3				4		
	Syphilis consecutiva .....	1		3				2		1				7		
	All other diseases .....	2		1		2		3		1		2		11		
Diseases of the serous and exhalant vessels.	Ascites .....															
	All other diseases .....									1				1		
Diseases of the fibrous & muscular structures.	Pernio .....															
	Podagra .....															
	Rheumatismus .....	7		17		6		8		6		15		59		
Abscesses and ulcers....	Fistula .....															
	Phlegmon et abscessus .....	25		27		4		16		11		53		136		
	Ulcus .....	1		10		2		13		3				29		
	Ambustio .....	1		3		1		2				2		9		
	Amputatio .....	1		1										2		
Wounds and injuries....	Contusio .....	8		39		9		12		8		12		79		
	Fractura .....	2		3										5		
	Luxatio .....			1		1				1				3		
	Sub luxatio .....	1		5		2		6		1		3		18		
	Vulnus incisum .....	4		38		6		12		4		19		83		
	Vulnus laceratum .....			3				1				1		5		
	Vulnus punctum .....	2				3				3		1		9		
	Vulnus sclopeticum .....	1										1		2		
	Debilitas .....			10		6						9		25		
Miscellaneous.....	Ebrietas .....	1		17				6		6		9		39		
	Hæmorrhoids .....			2		2		2		4		3		13		
	Hæma .....	1								1		2		4		
	Morbi cutis .....	2		4		3		5		2				16		
	Morbi oculi .....	1		16		2		2		4		4		29		
	Scorbutus .....	6		2										8		
	All other diseases .....	5		43		27		50		21		25		171		
	Total .....	170	3	904	9	303	2	518		107		336	1	1,578	15	



## REPORT ON THE SICKNESS AND MORTALITY

No. 2.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	THIRD QUARTER.												AGGREGATE STRENGTH.		
	YEARS.....	1849.	1850.	1851.	1852.	1853.	1854.								
	MEAN STRENGTH.....	318.	533.	257.	358.	303.	245.	2,014.							
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.		
Fevers.....	Febris continua communis.....	.....	.....	4	1	.....	.....	.....	.....	.....	.....	5	.....		
	Febris inter. quotidiana.....	18	210	230	254	121	15	.....	.....	.....	.....	848	.....		
	Febris intermittens tertiana.....	18	124	42	37	43	58	.....	.....	.....	.....	322	.....		
	Febris intermittens quartana.....	.....	.....	2	1	2	.....	.....	.....	.....	.....	5	.....		
	Febris remittens.....	12	119	21	60	10	9	.....	.....	.....	.....	231	.....		
	Febris typhus.....	.....	1	1	.....	4	.....	.....	.....	.....	.....	6	1		
Eruptive fevers.....	Febris typhus atetodes.....	3	3	.....	.....	27	9	.....	.....	.....	.....	30	12		
	Erysipelas.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....		
Diseases of the organs connected with the digestive system.	Rubeola.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Cholera Asiatica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Diarrhoea.....	53	66	2	22	1	18	39	1	26	.....	224	4		
	Dysenteria acuta.....	3	25	8	12	5	6	.....	.....	.....	.....	59	.....		
	Dysenteria chronica.....	2	3	2	1	1	.....	.....	.....	.....	.....	7	2		
	Enteritis.....	.....	2	1	.....	.....	.....	3	1	5	.....	.....	2		
	Hepatitis acuta.....	.....	.....	.....	2	.....	1	.....	.....	.....	.....	3	.....		
	Hepatitis chronica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Obstipatio.....	4	17	9	12	13	22	.....	.....	.....	.....	77	.....		
	All other diseases.....	9	17	16	12	9	11	.....	.....	.....	.....	74	.....		
Diseases of the respiratory system.	Bronchitis, acuta et chronica.....	.....	1	.....	1	.....	1	.....	.....	.....	.....	3	.....		
	Catarrhus.....	5	24	3	22	2	3	.....	.....	.....	.....	59	.....		
	Phthisis pulmonalis.....	3	1	1	.....	.....	3	.....	.....	.....	.....	7	1		
	Pleuritis.....	1	.....	1	1	.....	.....	.....	.....	.....	.....	3	.....		
	Pneumonia.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	2	.....		
	All other diseases.....	1	.....	1	2	.....	.....	.....	.....	.....	.....	4	.....		
Diseases of the brain and nervous system.	Cephalalgia.....	6	12	4	2	1	1	.....	.....	.....	.....	26	.....		
	Delirium tremens.....	.....	3	1	3	4	1	2	.....	.....	.....	12	2		
	Epilepsia.....	2	.....	.....	.....	1	.....	.....	.....	.....	.....	3	.....		
	Neuralgia.....	4	2	1	2	1	.....	.....	.....	.....	.....	10	.....		
	All other diseases.....	.....	3	2	1	.....	5	.....	.....	.....	.....	10	1		
	Gonorrhoea.....	12	3	.....	4	.....	1	.....	.....	.....	.....	20	.....		
Diseases of the urinary and genital organs.	Stricture urethrae.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....		
	Syphilis primitiva.....	.....	1	.....	1	2	.....	.....	.....	.....	.....	2	.....		
	Syphilis consecutiva.....	.....	.....	.....	1	1	1	.....	.....	.....	.....	4	.....		
	All other diseases.....	.....	1	.....	3	1	5	.....	.....	.....	.....	10	.....		
Diseases of the serous and exhalant vessels.	Ascites.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	2	.....		
	All other diseases.....	.....	2	1	2	1	.....	.....	.....	.....	.....	5	1		
Diseases of the fibrous & muscular structures.	Pernio.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Podagra.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Rheumatismus.....	3	7	6	5	11	18	.....	.....	.....	.....	50	.....		
Abscesses and ulcers.....	Fistula.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Phlegmon et abscessus.....	47	44	11	24	14	67	.....	.....	.....	.....	207	.....		
	Ulcus.....	3	13	6	5	1	4	.....	.....	.....	.....	32	.....		
	Ambustio.....	1	3	1	1	2	1	.....	.....	.....	.....	9	.....		
	Amputatio.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
	Concussio cerebri.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
Wounds and injuries.....	Contusio.....	14	8	1	8	3	4	.....	.....	.....	.....	38	.....		
	Fractura.....	.....	.....	1	1	.....	1	.....	.....	.....	.....	3	.....		
	Punctio.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....		
	Sub luxatio.....	.....	4	2	4	.....	7	.....	.....	.....	.....	17	.....		
	Vulnus incisum.....	6	10	7	13	8	4	.....	.....	.....	.....	48	.....		
	Vulnus laceratum.....	.....	.....	1	1	1	1	.....	.....	.....	.....	4	.....		
Miscellaneous.....	Vulnus punctum.....	.....	1	3	1	1	5	.....	.....	.....	.....	11	.....		
	Vulnus sclopeticum.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....		
	Debilitas.....	4	21	11	4	4	11	.....	.....	.....	.....	55	.....		
	Ebrietas.....	1	5	8	1	7	7	.....	.....	.....	.....	33	1		
	Hæmorrhœis.....	1	1	2	2	.....	1	.....	.....	.....	.....	7	.....		
	Hæma.....	.....	1	.....	3	.....	1	.....	.....	.....	.....	5	.....		
	Morbæ cutis.....	5	10	5	3	.....	19	.....	.....	.....	.....	42	.....		
	Morbæ oculi.....	.....	2	.....	.....	1	1	.....	.....	.....	.....	4	.....		
	Scorbutus.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....		
	All other diseases.....	39	18	14	43	26	11	.....	.....	.....	.....	181	.....		
Total.....		286	4	816	8	453	3	578	1	363	10	334	1	2,830	27

## AMONG THE TROOPS AT POSTS ON THE GULF COAST OF FLORIDA.

CLASSES OF DISEASES.	YEARS .....	FOURTH QUARTER.												AGGREGATE STRENGTH.	
		1849.	1850.	1851.	1852.	1853.	1854.								
		MEAN STRENGTH .....	763.	492.	198.	360.	242.	324.							2,279.
		SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.
Fevers .....	Febris congestiva.....		1										1		
	Febris continua communis.....		1		2	1		1					4	1	
	Febris inter. quotidiana.....	69	73	257	411	31	8						849		
	Febris intermittens tertiana.....	149	145	36	61	33	29						455		
	Febris intermittens quartana.....	34	7										41		
	Febris remittens.....	10	1	57	1	8	18	3	4				100	2	
	Febris typhus.....	1	1		1								2	1	
Eruptive fevers .....	Febris typhus icterodes.....							12	9				12	9	
	Erysipelas.....		1			1							2		
Diseases of the organs connected with the digestive system.	Rubeola.....														
	Cholera Asiatica.....														
	Diarrhoea.....	125	31	28	1	23		17		28			252	1	
	Dysentery acuta.....	45	18	1	8		12		17		22		122	1	
	Dysentery chronica.....	2	3										5		
	Enteritis.....									1			1		
	Hepatitis acuta.....					3							3		
Diseases of the respiratory system.	Hepatitis chronica.....	1											1		
	Obstipatio.....	7	10	10	11	23	10						71		
	All other diseases.....	10	12	5	9	12	4						52		
	Bronchitis acuta et chronica.....	3	3	3	3	3	1						16		
	Catarrhus.....	6	5	2	2	19	17						51		
	Phthisis pulmonalis.....	2				1		1					3	1	
	Pleuritis.....	4					3						7		
Diseases of the brain and nervous system.	Pneumonia.....	1		3									4		
	All other diseases.....	1	2			2							5		
	Cephalalgia.....	2	8	1						1			12		
	Delirium tremens.....		2	2	4	6	1						14	1	
	Epilepsia.....	1	3										4		
	Neuralgia.....		1	3		2							5	1	
	All other diseases.....		1			1								2	
Diseases of the urinary and genital organs.	Gonorrhoea.....	11				3		2		2			18		
	Structura urethrae.....														
	Syphilis primitiva.....	4	1					1					6		
	Syphilis consecutiva.....	1	3										4		
Diseases of the serous and exhalant vessels.	All other diseases.....	2	3	1						1			7		
	Ascites.....	2								1	1		3	1	
Diseases of the fibrous & muscular structures.	All other diseases.....	1	1		1								3		
	Pernio.....														
	Podagra.....														
	Rheumatismus.....	15	6	4	5	6	13						49		
Abscesses and ulcers.....	Fistula.....									1			1		
	Phlegmon et abscessus.....	39	7	12	13	6	18						59		
	Ulcus.....	8	5		2	3							18		
	Ambustio.....	1	1				2	1					5		
	Amputatio.....									1			1		
	Contusio.....	8	12	10	13	1	11						55		
	Fractura.....	2											2		
Wounds and injuries.....	Luxatio.....	1		3									4		
	Punctio.....			1									1		
	Sub-luxatio.....	6	1	4	9					2			22		
	Vulnus incisum.....	11	5	5	6	7	9						43		
	Vulnus laceratum.....	2			3	2							7		
	Vulnus punctum.....	1				1	1						3		
	Vulnus scilopetium.....	1											1		
Miscellaneous .....	Debilitas.....	4	55	7	2	1	4						73		
	Ebrietas.....		6	4	5	5	2						26		
	Haemorrhoids.....	1	4		4								9		
	Hernia.....	2			1								3		
	Morbi cutis.....	1	1										2		
	Morbi oculi.....		5	4	1	1	5						16		
	All other diseases.....	28	13	15	1	23	27	14					120	1	
Total .....		625	3	513	3	439	3	649	2	247	10	212	1	2,685	





# TEXAS.

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## SOUTHERN FRONTIER.

THE military stations on the southern frontier of Texas are located on the north bank of the Rio Grande, where that stream forms the boundary between the United States and Mexico, with the exception of two posts—Forts Merrill and Ewell—on the Nueces river: and one at Corpus Christi, at the head of Corpus Christi bay. The posts on the Rio Grande are Fort Brown, Ringgold Barracks, Fort McIntosh, and Fort Duncan.

### CORPUS CHRISTI.

The coast of Texas (says Assistant Surgeon J. B. Brown) is generally very low; but at this point it is quite bold, rising into a range of bluffs from thirty to sixty feet in height. The town of Corpus Christi is built upon a level plateau, reclaimed from the sea, and but a few feet above its level. This plateau extends back from the water's edge about 600 yards, where it terminates in a "bluff." It is composed almost entirely of shell detritus. The wells, which are sunk in the shell, are always more or less brackish, and the water causes derangement of the bowels in those unaccustomed to its use. For drinking and culinary purposes, rain-water is generally obtained from artificial reservoirs or cisterns; but, in times of extreme drought, the well-water is necessarily used. With this exception, the locality is a healthy one.

### MEDICAL TOPOGRAPHY AND DISEASES OF FORT EWELL.

By Assistant Surgeon J. Frazier Head: 1854.

Fort Ewell is situated on the west bank of the Nueces, at the point where this river is crossed by the road from San Antonio to Laredo, in lat. about  $28^{\circ} 12'$  N., and long.  $22^{\circ} 3'$  W. (from Washington); a spot which, long before its occupation by troops, had enjoyed the evil notoriety of being one of the most insalubrious in Texas.

At this place the river makes a turn, partly surrounding an elevated portion of land, which slopes from a height of some twenty-five feet above the ordinary level of the stream to its swampy margin. The soil is argillaceous, baked to almost stony hardness during the greater part of the year, but softened by the spring rains into a tenacious clay. It appears incapable of cultivation. Its vegetation is almost wholly confined to different varieties of cactus and acacia. A few elms are found in the swamp by the bank of the river.

The water of the Nueces is good, and, though during freshets it is often highly charged with organic matter, appears to be perfectly wholesome.

The meteorological records left at the post are not sufficient to furnish data for any satisfactory account of the climate.

Nearly surrounding the post, on both sides of the river, and in high water, allowing egress only by the road leading to Eagle Pass, is an extensive swamp, partially overflowed at every rise of the Nueces, and, at times, converted into a lake of many thousand acres. From this marsh the prevailing winds of summer sweep directly upon the site of Fort Ewell.

It is proper to state, that no officer of the medical department is believed to have been consulted as to the location of the post at a point so manifestly unfavorable to health.

The site was first occupied by troops on the 13th of May, 1852. It being intended to erect permanent buildings on the more elevated portion of the ground, the troops were forbidden, by orders from department headquarters, to encamp upon it, and were obliged to pitch their tents on the low land near the bank of the river, from which they were more than once driven by freshets, to return to it on the subsidence of the waters. Building-tools were ordered to be furnished in abundance; but the issue of lumber was so strictly curtailed, that for many months there was not enough at the post to make a coffin; and a commissioned officer, who had served gallantly in the Mexican war, was buried *in a barrel*. There being no timber fit for any mechanical use within twenty miles, the progress of the buildings, as may be supposed, was but slow; in fact, the only ones ever completed were two or three mud store-houses, which are already falling to decay; and in October, 1852, orders were received from the general commanding the department to suspend all labor upon the buildings here till further orders. In March, 1854, though the order for encamping in the low ground had not been revoked, the commanding officer humanely took the responsibility of removing the camp to the higher ground; but the (so called) "fort" remains to this day a mere camp, in which the troops have been for somewhat more than two years, without flooring for the tents, without proper food, and often without sufficient clothing, exposed to the intense heat and malaria of summer, and to the searching "northers" in winter, with no shelter but the canvas, which was sometimes carried away or blown into shreds by the hurricanes, which are not infrequent in this region, and from the force of which not a tree could be found to protect them. Sick and well have been alike subjected to this exposure.

The effect of this continued wretchedness is sufficiently shown by the medical history of the post; before proceeding to which, I may be permitted to say that no portion of the sufferings of the men can be charged upon the commanding officer of the post, who has done all in his power to alleviate them, and has made repeated and urgent representations of the condition of his command, and applications for the means of improving it.

The prevailing diseases are chiefly such as would be predicted from the most casual inspection of the locality—periodic fevers, and diseases of the digestive organs.

From the very imperfect records left in the medical department here, and extending back to include July, 1852, it appears that during two years there have occurred, in a command averaging 170, of periodic fevers, 627; other fevers, 13; of cholera, colic, dysentery, and diarrhœa, 150; of phlegmon and abscess, 105; and of all other diseases, 408—in all, 1,303; being 7,665 per thousand of mean strength; or every officer and man of the command has been sick, on an average, once in three months.

It will be observed by an inspection of the consolidated report, reduced to a tabular form, and forwarded herewith,\* that the ratio of disease has been steadily increasing during the whole period of the occupation of the post; that continued residence, far from acclimating the command, has impaired its powers of resistance. This effect is undoubtedly owing, in great measure, to the destitution and needless exposure of the men in an unhealthy situation. During the first year, the ratio of sick to the whole command was 268 per cent.; during the second, 557 per cent.

In the report of the mortality at Fort Ewell, there are some sources of fallacy; thus, of 87 cases of acute dysentery, none are reported as having terminated fatally. Many of these, however, assumed a chronic form; and some were sent to Corpus Christi, and other places, where they died of disease contracted here. Six men are known to have perished in this manner, beside those reported in the table; which, with the reported deaths, make an annual mortality of  $5\frac{1}{4}$  per cent.

During the months of May and June, 1854, it appears, from careful computation, that the proportion of sick to the whole command has been increasing more rapidly than at any time

\* As in other similar instances, the table here referred to is omitted.—C.



since the occupation of the post. Within this short period, with a mean strength of 92, the number of cases of disease has amounted to 162. Of these, eight only were furnished by the scouting parties detached from the post, which exceeded in number the force left as its garrison. Every man of the command has been disabled, on the average, five days in May and six days in June. In these two months the government has lost by illness 1,114 days' duty. When it is considered that had the men been sheltered, and otherwise properly cared for, at least one-half of this disease might have been avoided; and when the cost of the time thus lost to the government is computed, the *economy* of such a policy as has been pursued with these men may, perhaps, be doubted.

In March last, a requisition for anti-scorbutics, including a quantity of potatoes, was made by the commanding officer, at the recommendation of Assistant Surgeon Johns, U. S. A. The articles required were ordered to be sent hither, except that which was most needed and most likely to be of service—the potatoes. None of the anti-scorbutics ordered have yet been received. In June a number of cases of scurvy appeared among the troops; and of those who were not reported sick, a large proportion were more or less affected by this disorder.

In the character of the diseases here, since my taking the medical charge of the post, but few peculiarities have been observed which bear particularly upon the treatment. The attacks of periodic fever have seldom been ushered in by chills: and the convalescence has almost invariably been slow, and attended with unusual debility, requiring a liberal use of tonics, of which the chloride of iron and the infusion of wild cherry have been among the most efficacious. Returns of the disease have, of course, been frequent; and the tendency to recur at periods of seven, fourteen, or twenty-one days, has been strongly marked.

At one time, when the supply of quinine was exhausted, recourse was had to common salt as an anti-periodic. It was administered in the method advised by Dr. Hutchinson, (in the New York Journal of Medicine, March, 1854,) and with some apparent benefit. Of 21 cases thus treated, seven yielded to the remedy; the average duration of these cases being  $3\frac{1}{2}$  days. To the 21 patients, 285 doses were given, of which 29 were rejected. The results of this treatment are subjoined in a tabular form. The sulphate of zinc was also employed in a number of cases, apparently with good results; which, however, have not been numerically estimated.

In the treatment of scurvy, the most decided benefit was obtained by the use of the *freshly-prepared* juice of the agave Americana, which can only be procured from a considerable distance, and in small quantities.

In concluding this imperfect sketch of the medico-topographical history of Fort Ewell, I would remark, that the long-continued operation of the causes enumerated has at length rendered this command almost totally inefficient for any military purpose; and that, for the sake of humanity and the credit of the service, it is to be hoped that the order for the abandonment of the post, issued by the War Department in December last, may ere long be carried into effect.

*Table of cases in which chloride of sodium was used as a remedy in periodic fever.*

No of men.	No. of days during which salt was taken.	Whole number of doses taken.	No. of doses vomited.	No. of cases in which fever yielded.
3	5	63	2	2
5	4	90	12	1
7	3	84	8	2
6	2	48	7	2
21	14	285	29	7



## MEDICAL TOPOGRAPHY AND DISEASES OF FORT MERRILL.

By Assistant Surgeon Israel Moses: 1854.

Fort Merrill was built in 1849, on the Nueces, four hundred yards from the right bank. The river, in its ordinary stage of water, is fordable, and about forty yards wide. The low bottom-lands, on either side, are usually overflowed during the annual rise of the river in June, for miles in extent; and this was especially so during the last spring. The surrounding country is rolling, covered with rich grass, musquite, cactus, and clumps of oak; the banks of the river lined by rows of oak and cottonwood, richly festooned by heavy mosses. There is fine hunting in the vicinity. Deer, wild turkeys, geese, ducks, partridges, and rabbits abound. Catfish is the only fish found in the Nueces; trout exist in the small streams in the neighborhood. The fort consists of officers' quarters, and barracks for the soldiers, of square logs, and plastered inside; a hospital capable of accommodating twelve patients, surgery, store-rooms, &c.; store-houses, offices, and camp-women's huts—all roughly built, and unfinished. The garrison consisted of companies F and H, mounted rifles—about eighty-five in all—four officers, one lady, and five laundresses. Some dozen or twenty families of settlers on the other bank of the river, and a small Mexican ranch, were our only neighbors. Our chief food was derived from the commissary and the field—beef, salt provisions, and game. Vegetables were very scarce, and the only fruit inferior melons. No gardens were planted at the post, and the high water had swept off and destroyed those of the farmers. Corn, and a few sweet-potatoes, are the only articles raised—cattle being the chief source of wealth in this State, and especially in this neighborhood. The large blue grape grows in great perfection in a wild state, creeping through and covering the trees on the river-side. It makes a very fine wine and brandy. There are no other wild fruits. The temperature, generally, during the three months I was on duty at the post, was very high, the thermometer averaging from 90° to 100° F. at 3 o'clock, p. m., but tempered by a constant breeze; nights pleasant, enabling one to sleep delightfully, and awake refreshed. Rain has fallen in heavy showers for two or three hours almost every day, accompanied by thunder and lightning and cool breezes. \* \* \* The past winter was rather colder than usual. Snow rarely falls; thus we find in the month of February (14), snow fell to the depth of 1.11 inches, but soon melted. The coldest day was the 7th of January, when the thermometer stood at 22°, and ice formed three-fourths of an inch thick. Only once in February the mercury sunk below freezing-point, during the prevalence of a severe norther. The warmest day was August 6, when the mercury stood at 102° at half-past 12 o'clock.

Rain falls every month in the year, but in greatest quantity in the month of May. Then the rivers and creeks become swollen and overflow their banks, but subside during the month of June. The Nueces rose *twenty-six* feet in June, 1854. Very little rain falls during the winter months. Variations in temperature are often very great and sudden; a cold norther springing up, and freezing one who, but a few moments before, may have been panting with heat.

Heavy fogs settle down during the night over the river and bottom-lands, and are not dissipated until 9 o'clock. Fevers and diseases of the digestive system form the chief bulk of the sick-report. I here quote the remarks appended to the quarterly report, September 30, 1854, by Assistant Surgeon Head, who relieved me at the post on the 15th September:

"It will be perceived that, in July, with a mean strength of 79, (including therein scouting parties,) there were 34 taken sick, or less than half the mean strength; while in August and September, the number of sick considerably exceeded the mean strength. The proportion of sick rapidly increased about the middle of August, and has not yet materially diminished. I have endeavored to ascertain, as far as possible, the causes of this unusual insalubrity, and of its sudden increase. Early in June the river Nueces rose at this point to an unprecedented height (twenty-six feet). By the second week in June, the water had subsided, leaving exposed

to the sun a recently overflowed level of considerable extent lying to the east of the post; the prevailing wind has been from the southeast. This rise and fall of the river was followed by an increase of the sick-report, but much less than that which occurred in August. More rain, thunder, and lightning in July than June, and more in May than either. Scarcely any perceptible influence of these phenomena can be traced. About July 28, the post was stripped of many of its important medicines, to supply General Smith's escort, taken chiefly from other posts. Among other supplies, all the quinia, except *two ounces*, was taken, and it became necessary to economize the expenditure. Until August 14, small doses of quinia and piperin (five grains each) were used; and afterwards the treatment of periodic fevers was almost wholly by table-salt and Fowler's solution. It appears that the greatest increase of sickness coincided almost exactly with the discontinuance of the general use of quinia. During the thirty-five days from June 24 to August 28, there were: taken sick of malarial fever alone, 20; returned to duty, 26. During the succeeding thirty-five days, from July 28 to September 1, there were: taken sick of malarial fever alone, 70; returned to duty, 41.

"During the last two months, every officer, (except one who had been but ten days at the post,) every lady, every soldier, and every laundress, has been sick. There are not well men enough for the ordinary garrison duty: a single tour of guard is almost certain to send a man to the hospital."

The malarial poison appeared to be of unusual intensity, producing severer symptoms than ordinarily accompany intermittents; while they were prolonged in consequence of being deprived of quinia. Having but a small quantity, and an interval of one month occurring when I was obliged to await the arrival of a supply from New Orleans, I tried the effect of a solution of common salt, with success in less than half the cases.

I noted a marked increase in the number and intensity of the fever cases immediately after a rainy period. Military duty was exceedingly hard, and most of the men were broken down by heat and fatigue. If a number were sent on a scout, one-half or more returned sick; while of a camp of twenty men at Santa Gertrudes, only four remained well. Far from becoming acclimated, men grow less and less able to resist the excessive heats and fatigue of campaigning. A feeling of lassitude, and indisposition to mental or physical exertion, takes possession of all. A tendency to scorbutus showed itself in a few, but was readily overcome by suitable remedies and diet. Vegetables were very scarce, but grapes and melons could be procured in abundance. Not a single death occurred at the post.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT BROWN.

By Surgeon S. P. Moore: 1853.

Fort Brown, Texas, is situated in latitude  $25^{\circ} 53' 21''$  north, and in longitude  $97^{\circ} 29' 15''$  west, on the left bank of the Rio Grande, adjoining the town of Brownsville, and opposite the Mexican town of Matamoras. It is eight feet above the level of the sea, from which it is distant by the course of the river sixty-five miles, in a westerly direction, and twenty-eight miles from Point Isabel, in a westerly course. The fort enjoys the delightful Gulf breeze from the east every morning during the summer, which is the harbinger of health whilst the prevailing wind. The river rises about 15 feet, and generally reaches its maximum elevation in the month of July. The level of Fort Brown is two feet above high-water mark. The fort and town are built upon an alluvial soil. The formation of the soil is in slight elevations and depressions; the fort and a portion of the town are situated on one of these elevations, a depression existing above the town, in which is a part of the suburbs; there is also another below the garrison. When the river is high, these depressions are submerged, the water remaining for some time. After heavy rains the water settles around the town. When this happens, what is called Washington square is nothing but a pond, where ducks abound in winter; this square is situated on the northwest border of the town. A lagoon is immediately below the fort; a ditch connects it



with the river; so that when the latter is high, a free communication is established through the above means. When this condition of the river does not exist, there is no communication.

A majority of the inhabitants of Brownsville are Mexicans, living in miserable hovels, called "jacales;" the streets are not very cleanly, and but partially paved; the town contains about 3,500 inhabitants. There is no system of drainage in the town; the water runs off as well as it can, or remains on the ground. The Mexicans, without an exception, and many of the Americans, use the river-water for all purposes. The Mexicans are not particular; for it is not uncommon to see the women, after a rain, collecting it from the little puddles around their houses. Some of the dwellings of the whites have cisterns, and to them and their friends the rain-water is a great luxury. Three small cisterns have recently been constructed in the garrison. The men use the river-water. At those seasons when the river is low, the water is so extremely unpalatable as to render it almost impossible to drink it, being strongly impregnated with sulphur.

This fort was established in 1848. The town of Brownsville came rapidly into existence in the same year; since which period there have been no improvements of any consequence, and no clearings, around the two places.

The Mexicans are a miserable race of beings—I speak more particularly of those in our neighborhood—existing in squalid wretchedness in their foul cabins, very ignorant and superstitious. As an instance of ignorance, it may be mentioned that the English were supposed to be supplied with long tails, and, during the late war, those appendages were transferred to the Yankees. Morality is in a very low state, with no sign of improvement.

Previous to the breaking out of the yellow fever, the town and fort were decidedly healthy. During April, the maximum of the thermometer was 90°, the minimum 67°, and daily mean for the month was 79.25; winds principally from the S.E.; quantity of rain, 2.20 inches. The principal disease in this month was intermittent fever, and all of the cases were relapses; only two cases of diarrhoea.

In May, the maximum temperature was 89°, the minimum was 58°, the daily mean for the month was 78.83; winds principally from the S.E.; quantity of rain, 10 inches. The principal diseases the same as in the month of April.

During the month of June, the maximum temperature was 92°, the minimum was 70°, the daily mean for the month was 81.28; winds principally from the S.E.; quantity of rain, 1.7 inches. Relapses from intermittents still continue.

In July, commenced barometrical observations; maximum of barometer 30.29, the minimum 30.00; the maximum temperature 94°, the minimum 75°, the daily mean for the month was 84.18; winds principally from the S.W.; no rain; very disagreeable weather during the month; days and nights oppressive; the thermometer often as high as 90°, 91°, and 92°. Fewer cases of relapses this month than any month in the last quarter; post very healthy.

In August, the maximum of barometer was 30.24, the minimum was 30.07; the maximum temperature was 94°, the minimum 70°, the daily mean for the month was 82.48. Rain, 3.10 inches; thunder, and light showers; winds principally from S.S.E. On the 28th, a norther sprang up, which lasted two days. A norther in this month is a very uncommon occurrence; they usually commence in October and November, and continue until March. Heat very oppressive after showers; nights hot and disagreeable. A few more cases of intermittents than last month; our force in garrison was increased by one company of 4th artillery, recently arrived from New York.

In September the maximum of the barometer was 30.26, the minimum was 29.07; the maximum of thermometer was 90°, the minimum was 62°, the daily mean for the month was 78.41. The fall of rain 8 inches. The prevailing winds were from the N.W. and S.E. The month was quite unpleasant, cold and hot alternating; showers throughout the month, equal to an April day. There were four or five northers during the month—a very unusual thing. These winds are a peculiarity of this climate; they blow so violently as to cut off all communication between



Point Isabel, the Brazos, and the shipping. These winds blow for four or five days. The Mexican inhabitants view these northers much in the same light that the southern people regard a frost—that is, having the same tendency to check bilious and other fevers. In the latter end of the month there were some severe cases of fever among the Mexicans: the physicians, at first, did not know what name to give it; it was commonly called the dengue. On the 23d I was called to a man, in town, with fever; pronounced it yellow fever. From this date it gradually extended itself in Brownsville; the type, at this time, was not malignant. In the first part of the month, and before the appearance of the epidemic in town, a good deal of fever existed among the crew of the steamer Comanche, undergoing repairs at the mouth of the Rio Grande; this fever was called the dengue; some deaths occurred. I do not know what physician attended these cases. No river communication existed between the steamer and the town; some two or three well persons came up to town by land.

In October the maximum of the barometer was 30.52, the minimum was 29.72; the highest degree of the thermometer was 84, the lowest degree was 50; the daily mean for the month was 71.72. Quantity of rain, 7.75 inches; showery weather; thunder and lightning. The prevailing winds were S.W. and N.W. The weather disagreeable and raw. Two companies of the 7th infantry arrived at this post from Ringgold Barracks, to constitute a part of the garrison. The yellow fever made its appearance in the garrison in the first week of the month; the cases exceedingly well marked, and of a more malignant type than it had previously shown. From the lateness of the season, it was hoped the epidemic would not continue long with us.

In November the height of the barometer was 30.47, the lowest was 29.96; the height of the thermometer was 79°, the lowest was 45°; the daily mean for the month was 68.91; quantity of rain 1.30 inches. The prevailing winds were N.W. and S.E. Northers were frequent during the month. The Mexican idea of these northers checking the epidemic, and purifying the atmosphere, is not correct—the epidemic being evidently worse during and after the prevalence of these winds; the sudden changes of temperature operating very injuriously upon the sick, and not checking the progress of the disease in the least. The disease on the increase in the garrison. During the month the epidemic appeared at Point Isabel.

In December the maximum of the barometer was 30.46, the minimum was 29.86; the maximum of the thermometer was 76°, the minimum was 42°; the daily mean for the month was 62.45; quantity of rain 0.65 inch. The prevailing winds were N.W. and S.E. The epidemic on the decline in the second week, possibly from the want of subjects; for nearly every person in garrison has been sick with the fever. There was a frost on the 18th, weather cool and pleasant; the frost was hailed with joy by the fortunate few who had escaped: the cases that occurred after the change in the weather were much milder in type. The last case was on the 23d.

Since the establishment of this post, and the building of the town, they were visited in 1849 by the cholera, with a good deal of severity; the dengue prevailed in both places in 1850, and again in 1851. Matamoras was at the same periods afflicted with these diseases. From information that may be relied on, this Mexican town was first visited by the yellow fever in 1841, 1845, and 1853; at the Brazos and Point Isabel in 1848; at the same time the cholera prevailed here, it was also at the Brazos, and proved extremely fatal.

It has been remarked by various authors, that an uncommon abundance of insects has been noticed to portend disease. This was not the case here; indeed, the flies and mosquitoes were fewer than usual; my experience is quite the reverse. I have noticed elsewhere that an absence of these insects portended disease, or rather that the climate was unhealthy. Fort Mellon, Florida, was remarkably free from insects, and yet bilious fever in all its grades was very rife.

The epidemic constitution of the atmosphere must be attributed to a departure from the usual winds which prevail here, as those coming from the north lower the healthy tone of the body. These winds uniformly exasperated the late epidemic; they might, therefore, have had something to do in producing it, together with animal and vegetable decomposition, by means of

solar heat. The meteorological register is not complete for the years in which the cholera and dengue prevailed, so that any departure from the usual winds cannot be ascertained.

The epidemic commenced its ravages in the garrison in the first week of October; was at its acme towards the end of November, and ceased soon after the appearance of frost. The first case of the late epidemic in Matamoras occurred on the 1st October; the last on the 20th December.

Apart from the epidemic influence on man, nothing was observed remarkable in the animal or vegetable kingdoms.

It may be asked if the yellow fever of the United States is the same disease as the *fièvre amarilla*, or, as it is more frequently called, *romito prieto*, of the Mexicans? There can be no doubt of it. It is the same disease as the yellow fever of Charleston, South Carolina, of New Orleans, and of Pensacola, I having seen the disease in these cities; in the late epidemic that prevailed here and in Matamoras, the symptoms were too evident to admit of doubt.

It has been suggested at Washington that the recent wide-spread epidemic, which has devastated the southwestern States, began in Rio Janeiro in 1850, and has been creeping northward each successive year; in other words, that it is a new disease. It is probable that in almost every country in which this disease has committed its ravages, it has received a new name. From its depredations in the West Indies, it has been called the St. Domingo, Barbadoes, and Jamaica fevers: on the Guinea coast, and adjacent parts, the Bulam fever; in British India, it is distinguished by the name of jungle fever, the Hoogly fever; and still further east, by that of mal de Siam; and in the south of Spain, the Andalusian pestilence. In the present day its more common name is yellow fever, and, when the attack upon new-comers is slight, acclimating.

From its appearing in different parts of the world, and under different circumstances, it is not surprising that it should often be accompanied with a diversity of symptoms. These distinctions may be accounted for by the origin and laws of febrile miasm, partly upon the condition of the body at the time of attack, and on some modification in the powers of the febrile miasm itself.

It is supposed by some writers that the causes of yellow and bilious fevers are the same—that is, it proceeds from marsh miasmata. The assertion can be refuted by several reasons; and, among them, it may be mentioned that last year the garrison, Brownsville, Matamoras, and all the ranches up and down the Rio Grande, and in the interior of the country, suffered terribly from bilious fever in all its grades; not a case of yellow fever presented itself. During the prevalence of the late epidemic at Fort Brown, Brownsville, and Matamoras, all the ranches were remarkably exempt from disease of any kind. Then, again, the symptoms of the two diseases are not the same; in all cases of these diseases, the characteristic symptoms are observable. It is evident that these diseases are quite distinct, and arise from different causes.

The question of contagion is a very important one, and has occupied the attention of physicians and philanthropists for a long period, without definitely settling it; there can be no hesitation in giving a decided opinion that it is not. The disease is of domestic origin. The arguments for contagion are opposed by facts; these are well known, and need not be stated. I may mention one instance: in 1842 or 1843, while stationed at the Barrancas, Fa., the French steam-frigate Gomer arrived in the harbor of Pensacola, from a West India cruise, with the yellow fever on board. Permission was granted to the surgeon of the ship to occupy one end of the naval hospital. All the sick and convalescent were transferred to the hospital, and the other cases as they occurred on ship-board. The disease went through the ship's crew; yet not a single case appeared on land, although the hospital contained many patients from the home squadron. Our troops were encamped within 100 yards of these sick, and the inhabitants of the Barrancas living within striking distance. No effort was made to establish a system of quarantine with the sick or the ship. Frequent communication took place between the sailors and the landmen.



Setting aside the vexed question of quarantine, hospitals should be established in healthy situations; all sources of noxious effluvia should be removed; and by correcting such effluvia, when known to exist, by appropriate fumigations, and by excluding persons not exempt from the disease from the infected district. These and such efforts should be made upon the first appearance of any epidemic.

Recent microscopic observations of the blood might have led to important discoveries, so as to throw more light on the nature of this disease. My time was so much occupied during the prevalence of the epidemic, that no post-mortem examinations were made. Gastritis is supposed by some to be the principal part of the disease. I think yellow fever a peculiar and distinct disease, and the precise pathological conditions essential to it are at present unknown.

There were 245 cases of yellow fever treated in garrison during the recent epidemic, and 50 deaths—nearly one-fifth. The amount of mortality should, however, be diminished; for it will be perceived, by a reference to the remarks opposite the names of the deceased men in the quarterly report of sick and wounded, that many of the patients were of very intemperate habits, others had broken-down constitutions, and some had relapses from imprudence in eating, &c.

Two companies constituted the garrison of the post until the latter part of August, when the force was increased by the arrival of one company from New York. In October, just before the appearance of the epidemic, this force was still further increased by the addition of two infantry companies from Ringgold Barracks. All of these men were strangers, and, of course, unacclimated; hence, the mortality was greater among these new-comers. It is said that the Irish and Germans afford the worst cases; the remark is correct. Our army is principally composed of the inhabitants of these countries, and this holds good with the men here. Other causes operated to swell the mortality, and, under all the attendant circumstances, it was surprising the mortality was not even greater. The principal was intemperance; almost all the men indulged in drink to excess; some apparently driven to it by fear, but by far the greater number from pure love of strong drink. Nothing could stay this drinking propensity; the men appeared determined to make true the saying: "Let us eat and drink: for to-morrow we shall die." I can certainly say I never saw so many drunkards congregated together before. Fear was another cause. As soon as a man was detailed to act as a hospital attendant, (in a large majority of these details,) the first thing for the man to do was to slip off into town, and the next was to find him drunk. It is remarked that the drunkard is almost sure to die. This saying was realized here; for nearly every intemperate man, seized with the fever, died. This may be a fitting place to remark, that soldiers make very bad nurses and cooks; which is very annoying.

The general treatment may be summed up in a few words: general and local blood-letting; calomel, combined with quinine; sinapisms, mustard pediluvia, enemata, &c. General bleeding was not often necessary; this depended on the condition of the pulse, degree of fever, &c. Calomel was always combined with quinine in several of the first doses; repeated every third hour, at discretion; at the same time, free cupping to the epigastrium, back of the neck, and lumbar regions; cathartic enemata, so as to produce free evacuations from the bowels; a warm mustard-bath was always used without delay, and pediluvia repeated every third hour. The combination of calomel and quinine acts upon the whole system. I regard this combination of the utmost importance in the treatment of all southern fevers. Great difficulty was experienced in relieving the extreme irritability of the stomach: oil of terebinth succeeded better than any other remedy; its use was not, however, wholly satisfactory.

In the weakened state, not much medicine was necessary: quinine in small doses, camphor mixture, carbonate of ammonia, and a little nourishment every second or third hour.

#### MEDICAL TOPOGRAPHY AND DISEASES OF RINGGOLD BARRACKS.

By Assistant Surgeon Israel Moses: 1854.

Ringgold Barracks is situated immediately upon the left bank of the Rio Grande, or Bravo. This stream is about two hundred yards wide, shallow, and impeded by sand-bars; navigable



for twenty miles further up, as far as the village of Roma, and of an exceedingly tortuous course. The water, ordinarily, is good for drinking; but during and immediately after the spring freshets is thick, muddy, and offensive to the taste and smell. The surrounding country is miserably poor, covered with cactus and dwarf mesquite, and a few ebony-trees. Vegetation scanty, and gardens cultivated by the extremest care in a few sheltered and richer spots. The site of the post seems to have been selected from being opposite the small Mexican town of Camargo, four miles interiorly from the river, occupied by our forces during the operations on the Rio Grande in 1846; and immediately on the right, a few hundred yards distant, is the Rio Grande City, or Davis's Rancho, containing about six hundred souls—Mexicans, Americans, Germans, Italians, and, I might safely say, representatives from all nations. With few exceptions, the inhabitants are miserably poor. The men work in the fields, tend cattle and goats, and hunt wild horses. As in all Mexican towns, gambling is a vice indulged in by all classes. The females are generally comely, but not handsome; neglectful of their persons, and loose in morals, but far superior to the men. The foreign residents, Americans and others, are store-keepers, horse-traders, and gamblers. Some few years ago, Rio Grande City contained the worst population in Texas, but now has among its citizens several intelligent and respectable men. A large trade was done in smuggling across the river into Mexico by Americans and Mexicans; but since the revolution and complete discomfiture of the *jilibusters*, all intercourse has been interdicted, and military law prevails. The foreign and better class of native inhabitants enjoy comparative comfort and cleanliness; but the majority live in miserable *jacales*, crowded together with dogs, pigs, and chickens, having a goatskin for a couch, sitting on the floor, and living, for the most part, on tortillas and chili. The complexion of the females is generally very dark; hair fine, and black; good teeth; rather stout, but well proportioned; polite, and agreeable in manners. The usual passion for dress and ornaments prevails, and they are skilful and tasteful in making articles of dress. The Mexicans are remarkably healthy, owing to their simple diet, and being much in the open air. The females attain the age of puberty at fourteen or fifteen years of age, and childbirth is the same in character as among other females in the same social condition. Children are very healthy and well formed, and run about naked until eight or nine years of age.

Ringgold Barracks is a small military post, built to accommodate two companies, but at this time was garrisoned by eight companies and band. The commanding officer's house occupies a knoll about eighty yards from the river-bank, and the officers' and soldiers' quarters, on the right and left facing the parade, are framed and plastered, and comparatively good. Latitude  $26^{\circ} 23' 17''$ , longitude  $99^{\circ} 2' 46''$ . Height above the Gulf, 121.9 feet.

The Meteorological Register for 1854 shows less excessive temperature than usual of both heat and cold; for, on reference to the record of observations of other years, I find the thermometer noted as high as  $108^{\circ}$ , though it did not reach higher in 1854 than  $102^{\circ}$  on the 16th May. The minimum was  $29^{\circ}$ , when a very thin sheet of ice was formed during the night. The northers were very mild, and less frequent than usual.

This is considered the hottest post in Texas. The winters are very mild, except when a norther blows. I have sat during the month of January, 1855, with windows and doors open until 9 o'clock, p. m.; and on the first of March it was hot enough to dispense with flannels, and put on light linen clothing. The heat is constant for nine months of the year, and is excessively prostrating to the mental and physical energies.

The mean annual temperature is  $73.66^{\circ}$ , nearly the same as that of Fort Merrill.

Rain fell every month of the year, except April—in greatest quantity in June—and produced here the same unhappy effects as at Merrill, swelling the Rio Grande, and overflowing a vast extent of country on both sides as far as the mouth of the river, and causing unusual sickness.

On my arrival at this post (September 30), I found the same disease prevailing which had existed at Fort Merrill—a malarial fever of unusual severity. The disease, soon after my ar-

rival, increased in intensity, and attacked a large majority of the garrison, and nearly every soul in the adjoining village; appearing in the different degrees from ordinary fever and ague to a low congestive form of remittent, closely approaching yellow fever. At Camargo, on the Mexican side, four or five miles distant, nearly one-third of the population died: more than thirty died at Rio Grande City. Along the banks of the Nueces and Rio Grande, few escaped between Laredo and Brownsville; while at Monterey, Saltillo, and Mier, in the interior, the disease was comparatively mild; at Corpus Christi, on the other hand, it was of greater severity, and assumed the form of *black vomit*, or true yellow fever. Cholera prevailed in middle and northern Texas. The summer and autumn have been unusually hot and dry, and the winter exceedingly mild, frost having formed but twice or three times early in the day. During the month of June, an unusual quantity of rain fell. By reference to the hospital register, it is ascertained that no less than *three hundred and ten* cases of malarial fever occurred among the troops, which, with diarrhœa and dysentery, *sixty-six* cases, go to form the great bulk of the sickness. Out of fifty-two women and children, there were twenty-seven cases of fever, and *fourteen* of bowel complaint. Out of a population of some five hundred in Rio Grande City, I attended about *two hundred*, of whom six died. Scarcely a man, woman, or child can be found who has not had some form of the disease. The symptoms, in all cases, were marked by great severity—the headache, pain in the limbs and back, were excruciating; there was complete anorexia and insomnia, with prostration of the mental faculties and physical strength; a pale, bloodless hue of the face, often tinged with a dull yellow, attended even the milder forms; while, in the severer types, all these were intensified—the head hot; face either perfectly *exsanguine* or of a mahogany color; conjunctiva injected, and of a deep yellow; tongue covered with a thick yellow fur; lips dry; sunken expression of the countenance; brain sometimes dull and oppressed, so that the patient could not utter his wants; in others, clear and active; and again, in a state of raging delirium, with constant crying out in loud tones and shrieks. In females, a severe paroxysm of *hysteria*, and in infants *convulsions*, frequently ushered in the disease. The bowels rather disposed to be inactive; but towards the close of the epidemic diarrhœa prevailed, the dejections being thin and yellowish. Vomiting of thin, greenish-yellow matter occurred in nearly all cases, and in some was extremely obstinate. In fatal cases, especially of the congestive fever, the surface is pale, cold, and clammy; skin rugose, as if soaked in water; face pale, of a muddy or dull-yellow hue; eye dull; conjunctiva yellow; pulse very rapid, and so feeble as scarcely to be felt; voice thick and inarticulate, and mind wandering. Patients who were apparently doing well at my ordinary visit at 8 A. M., in two or three hours after have been found in a state of collapse, from which the most active remedies could not revive them. The disease readily yielded to remedial agents, but the convalescence was tedious: complete lassitude and feebleness follow, irritability of temper, capricious appetite, irregular sleep, and indisposition to mental exertion. The complexion retains the dull-yellow, and the lips their bluish *exsanguine* hue. Relapses are very frequent, recurring every seven or fourteen days, and, in some cases, it is impossible to break up the disease; fever and chill attacking the patient, without regularity, every two or three days, especially after the slightest fatigue.

I regret that my own illness prevented the post-mortem examination of all but two out of the five fatal cases in garrison. In both of these, however, I found the congested venous system and the bronzed liver; enlarged and softened condition of the spleen, first noticed by Dr. Stewardson, and confirmed by a large number of examinations at which I assisted while attached to the New York Hospital. This condition of the liver appears to result from the engorgement of the biliary and venous systems, while the contact of the intestines allows the gases secreted in them to come in contact with the exterior surface of the liver, and give it a dark-bluish tinge. Dr. Alonzo Clark thinks this is a peculiar deposit in the shape of small scales, and is now engaged in its examination by the microscope. In neither case were the stomach or glands of the intestines the seat of lesion.

In the treatment of the disease, I placed my chief reliance on quinia, aided by wine, brandy,



and other stimulants. I never had occasion to take blood, except locally, to relieve the pain and sense of fullness about the head. Cathartics were only used to relieve constipation, and these were of the mildest character—a simple pill, castor-oil, or laxative enemata. Not as much as a drachm of calomel was used in all the cases. When the skin was hot and dry, frequent sponging with vinegar and water; and, in cases of fullness and heat of head, a cloth wet with the same, or evaporating lotion, were used, and proved agreeable to the patient. Full doses of morphine were given to induce sleep, often without effect; this insomnia being one of the most constant and exhausting symptoms in many cases.

Quinia was used in full doses, and without any regard to the fever: in the remittent form, according to severity, from *five* grains every four hours to *ten* grains every two hours. In intermittents, I gave it every way, and found all equally efficacious in divided doses between the paroxysms: in a *twenty-five* or *thirty* grain dose an hour before the paroxysm, or a single *thirty* grain dose as the sweating stage is subsiding, as recommended by an English army surgeon. I am inclined to prefer the last mode, for several reasons—it saves the medicine; it is least troublesome both to the patient and apothecary; the time is more marked; and it is successful. A single dose, in many cases, is sufficient to check the disease. Brandy, wine, carbonate of ammonia, beef-tea, &c., &c., are necessary adjuvants in the different stages of fever.

At a period when I was almost without quinia, I resorted to other remedies,—arsenic in pill, as recommended by M. Andral; Fowler's solution; nitric acid, as recommended by Dr. Bailey, of Indiana, and which was of decided benefit, and a cheap article for the poor. Both at this post and Fort Merrill, during a period when they had been stripped of their supplies, I employed a solution of salt in about fifty cases, and with success in about half the number; but I can regard it only as a *dernier ressort*. There is great repugnance to its use on the part of patients; it produces nausea; is very uncertain; requires to be used for a week or more, and, in many cases, is rejected as soon as taken into the stomach. Hereafter, I propose giving a more detailed account of the remedy.

The most extraordinary feature of the report is the complete absence of syphilitic disease; the single case of gonorrhœa was contracted in the vicinity of Laredo. Not a case exists in town, nor among the troops—a fact without a precedent! That a Mexican town, in which there are about two hundred women, and mostly of Mexican morals, should exist without syphilis among them, is a wonder.

From the entire absence of vegetable food, *scorbutus* manifested itself in many cases; although only fifteen are reported, of whom one died. The remedy made use of was the bicarbonate of potassa, in twenty-grain doses, three times a day; opium grs. ij every four hours, and a wash of tinct. cinchonæ et myrrhæ. Two cases were treated with the juice of the maguey with benefit; but in others I was obliged to discontinue its use, on account of its cathartic action on the bowels. Vegetables, oranges, and limes (whenever they could be procured), were given freely.

Four surgical operations have been performed, under the influence of chloroform, without unpleasant effects, and with success, viz: amputation of the arm near the shoulder-joint; for strabismus; amputation of the fore-finger, for deformity consequent upon gunshot wound; amputation or disarticulation of the knee-joint, a history of which will be reported elsewhere.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT McINTOSH.

By Assistant Surgeon Glover Perin : 1852.

This post is situated on the left bank of the Rio Grande, in latitude 27° 31' N.; longitude 99° 21' W. The plain upon which it is placed has about 50 feet elevation above low water of the Rio Grande, and extends back from the river, at this point, about two miles, where it is interrupted by a low range of hills running parallel with the same. The soil is of a loose, sandy character, containing a small portion of clay; it has a depth of from 15 to 30 feet, resting upon a basis of cretaceous limestone.



Coal of a very bituminous character is found in small quantities in the bank of the river, a few miles above the post.

Owing to a variety of causes, such as the bad character of the soil, the small quantity of rain, great solar heat, and the constant prevalence of S.E. winds, causing rapid evaporation, the flora of this vicinity is very limited.

Only such trees and plants are to be found as can best resist the combined action of the causes above named. The principal, and almost the only, tree to be seen, is the "mesquite," a species of the numerous family of the acacia. Along the river-banks may occasionally be observed the willow (*salix*), ash (*fraxinus*), mulberry (*morus nigra*).

A great variety of the family of the *cacti* grows here; the most common is the prickly-pear (*cactus opuntia*).

The more important plants of the family of the *gramina*, such as wheat (*triticum*), oats (*avena*), rye (*secale*), sugar-cane (*saccharum officinarum*), do not grow here. *Zea-mays*, or Indian corn, is cultivated in small quantities; it requires a soil, however, which is made by deposits from the river, and which is annually irrigated by the same.

The grasses under this head are very limited in number. The *cryptogamia*, usually so numerous, here compose a small family.

The animals found wild in this vicinity are the leopard, American lion, or puma, antelope, wild horse, deer, wolf, &c.

The climate is mild. The seasons may be considered as but two—summer and winter. The summer usually commences in March, and ends in November; a high temperature usually prevails during this period, the thermometer ranging between 75° and 107° in the shade. The winters are very mild, except during the prevalence of what are here called "northers." These are violent north winds, accompanied usually with rain; they continue from three to six or eight days.

The mean annual quantity of rain, on an average of three years, is 16.63 inches.

The tabular statement which accompanies this report cannot be considered as a fair exponent of the amount of true sickness that has prevailed at this post. I would state that it includes *all* the cases reported sick, many of which were of a light or trifling character.

The intermittent and remittent fevers reported did not have their origin at this post. I have not encountered a disease of malarial origin among the troops of this command, during a period of three years, which did not have its rise while the soldier was on detached service. The citizens of the town of Laredo, which is in the vicinity of the post, have a like freedom from malarial diseases.

The diseases most prevalent here are those affecting the digestive organs. Among the principal causes of them, inebriety may be considered the most prominent. There is nothing new or peculiar in their character to elicit comment.

Of the class "all other diseases," the most common is scurvy. Owing to the great drought which prevails here, succulent vegetables cannot be procured for the command, and scorbutus is of frequent occurrence. In its treatment, I now use exclusively the expressed juice of the agave Americana, and it is not usual for soldiers to go upon the sick-report.

[The use of the expressed juice of the agave Americana was first suggested by Assistant Surgeon Perin, in the following communication. The preparation, by direction of the Surgeon General, has been tried at several stations in Texas, and the reports are such as to establish the fact of its being a valuable remedy in scorbutus. The recently prepared juice is preferable to the extract, which seems to lose strength by time.]

FORT MCINTOSH, LAREDO, (TEXAS,) May 7, 1851.

SIR: A few days after my communication to the Surgeon General of the 9th ult., finding, as I had anticipated, that the number of cases of scorbutus was still increasing, and that the lime-juice (the only effectual remedy) could be procured in but limited quantity, I was induced to

look for relief in some other way. The inquiry presented itself, whether the citizens of the town of Laredo, who are alike destitute of vegetables, had not been affected with this disease; and, if so, what domestic remedies had they used?

I was informed by a curate of the town, an intelligent Catholic priest, that a few cases had come to his knowledge, and that he once suffered from an attack of scorbutus in his own person. He gave me an account of his own case, and of the domestic remedies resorted to.

He stated further, that he left his bed on the ninth day from the time he commenced the use of his remedies, and that by the fifteenth he was so far recovered as to resume his parochial duties. He did not know to what agent he should attribute his rapid recovery, but expressed his belief in the superior efficacy of warm bathing, which he used daily.

Among the domestic remedies which he used, and the one which appeared at once to my mind as the chief, was the *magney*, or *agave Americana*. This plant is mentioned, among the unofficial articles in the U. S. Dispensatory, as the American aloe, and "is said to be laxative, diuretic, and emmenagogue."

As officinally described, it is the agave Americana; nat. order, *Bromeliaceae*; sext. syst., *Hexandria Monogynia*.

As the magney appeared to be the remedial agent in the curate's case, I determined to make a trial of its effects upon some of the patients suffering from the scurvy in this command. The following cases were selected:

Private Turby, of company "G," 1st U. S. infantry, was admitted into hospital March 25th, in the following state: countenance pale and dejected; gums swollen and bleeding; left leg, from ankle-joint to groin, covered with dark, purple blotches; leg swollen, painful, and of stony hardness; pulse small, feeble; appetite poor; bowels constipated. He was placed upon lime-juice, diluted and sweetened so as to make an agreeable drink, in as large quantities as his stomach would bear: diet generous as could be procured, consisting of fresh meat, milk, eggs, &c.; vegetables could not be procured. April 11th. His condition was but slightly improved; he was then placed upon the expressed juice of the magney, in doses of f. ʒ ij, three times daily; same diet continued. April 17th. General state very much improved; countenance no longer dejected, but bright and cheerful; purple spots almost entirely disappeared; arose from his bed and walked across the hospital unassisted; medicine continued. May 4th. So much improved as to be able to return to his company quarters, where he is accordingly sent; medicine continued. May 7th. Almost entirely well; continue medicine.

Private Flood, company "G," 1st U. S. infantry, was admitted into hospital April 10th. His general condition did not differ much from Private Turby's. He had been on the sick-report for eight days; had been taking citric acid drinks, but grew gradually worse up to the time of his admission, when he was placed upon lime-juice until the 13th, at which no perceptible change had taken place. On that date he commenced the use of the expressed juice of magney; same diet as the case above described. April 21st. General state so much improved that he was sent to his company quarters. May 2d. Well; returned to duty.

Eleven cases, all milder in form than the two just related, were continued upon the lime-juice; diet the same. On the 21st of April they exhibited evidences of improvement, but it was nothing when compared with the cases under the use of the magney.

Seven cases were under treatment during the same time, making use of citric acid. On the 21st April no one had improved, and three were growing worse.

At this time, so convinced was I of the great superiority of the magney over either of the other remedies employed, that I determined to place all the patients upon that medicine. The result has proved exceedingly gratifying—every case has improved rapidly from that date. The countenance, so universally dejected and despairing in the patients affected with scurvy, is brightened up by contentment and hope in two days from the time of its introduction; the most marked evidences of improvement were observable at every successive visit.

From observing the effects of the magney in the cases which have occurred in this command,



I am compelled to place it far above that remedy which, till now, has stood above every other—the lime-juice.

This, no doubt, will appear strong language, but further experience will verify it. The juice of the maguey contains a large amount of vegetable and saccharine matter, and of itself is sufficiently nutritious to sustain a patient for days.

This succulent plant grows indigenous in most parts of this State, and, if I am correctly informed, in New Mexico and California. In Mexico, it is well known as the plant from which they manufacture their favorite drink, the "pulque," and grows in great abundance. As it delights in a dry sandy soil, it can be cultivated where nothing but the cacti will grow; for this reason, it will be found invaluable to the army at many of the western posts where vegetables cannot be procured.

The manner in which it is used is as follows—viz: the leaves are cut off close to the root; they are placed in hot ashes until thoroughly cooked, when they are removed, and the juice expressed from them. The expressed juice is then strained, and may be used thus, or may be sweetened. It may be given in doses of from two to eight ounces, three times daily. It is not disagreeable to take, and in every instance it has proved to agree well with the stomach and bowels.

After the leaves have been cooked, the cortical portion near the root may be removed, and the white internal portion may be eaten. It appears to be a wholesome and nutritious food. I have seen muleteers use it in this way, and they seem to be very fond of it. I have been informed, upon good authority, that several tribes of Indians in New Mexico make use of it in the same manner. The use of the leaf in this way, I believe, will ward off most effectually incipient scorbutus.

The great benefit I feel confident will accrue to the army, by the introduction of the maguey as a remedial agent in the treatment of scorbutus, has induced me to address you at some length upon this subject; its importance, therefore, is my apology for the length of this communication.

I have the honor to remain, very respectfully, your obedient servant,

G. PERIN,

*Assistant Surgeon U. S. A.*

Brevet Brig. Gen. TH. LAWSON,

*Surgeon General U. S. Army, Washington, D. C.*

FORT MCINTOSH, LAREDO, (TEXAS,) July 3, 1851.

SIR: I have the honor to forward, herewith enclosed, the quarterly report of sick and wounded at this post for the quarter ending June 30, 1851; also, the meteorological registers for the month of June, 1851.

It will be observed, by an inspection of the report of sick, that scorbutus has been the principal disease which has occurred at the post during the quarter. It is with no ordinary feelings of pleasure that I can state that the report which I made to the Surgeon General, under date of May 7th, upon the successful use of the *agave Americana* in this disease, has been fully verified by subsequent experience.

There has not been a single case which has not yielded in the readiest manner to its curative effects. As soon as the patients that were upon the sick-report (at the time this remedy was introduced) had convalesced, it was not found necessary to admit others; the soldiers continued upon duty, recurring to the hospital daily for their medicine. There are no cases of scurvy now in the command.

I have the honor to remain, very respectfully, your obedient servant,

G. PERIN, *Assistant Surgeon U. S. A.*

Brevet Brig. Gen. TH. LAWSON,

*Surgeon General U. S. A., Washington, D. C.*



## FORT DUNCAN.

According to the remarks appended to the quarterly report of Assistant Surgeon George E. Cooper, Fort Duncan is situated on the Rio Grande, near Eagle Pass, Texas. The immediate site is upon a plateau, covered with fine grass and mesquite trees, elevated some fifty or sixty feet above the river, protected on the N. and E. by a ridge of hills, from the *northers*, which prevail in the winter months, but open on the S., S.E., and S.W., and partially on the N.W., from which quarters the summer winds blow. The fort is some 500 yards from the river; having in the interspace a flat, some twenty or thirty feet lower than the site of the fort, covered with bushes and grass. The soil is aluminous, until it reaches within a few yards of the river, when it becomes sandy. The post occupies the most eligible position within a distance of fifteen miles above, or forty miles below the Presidio crossing of the Rio Grande. The troops suffered much from alternate exposure to drenching rains and excessive heat. Assistant Surgeon Cooper expresses the belief that "when good and comfortable quarters shall have been erected, this post will be the most healthy, as it is now the most beautiful, post on the Rio Grande." The principal diseases are remittent fever and diarrhœa, the latter probably attributable to the saline waters of the Rio Grande.

## DISEASES.

Having passed in review the several positions in this region occupied by troops, we proceed to the consideration of the principal diseases, as shown by the consolidated abstract herewith presented; and first in order comes the following:

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	5,179	3,578	78	690	15+
Second quarter.....	4,031	3,452	53	856	13
Third quarter.....	3,783	3,810	40	1,008	10.6
Fourth quarter.....	4,806	4,929	108	1,025	22.5
Annual ratio.....	4,450	15,769	279	3,543	62.6
Exclusive of cholera.....		15,693	235	3,526	52.8

According to this table, the relative annual proportion of cases of sickness to the strength of the command was 3.54 to 1, and the corresponding ratio of deaths 1 to 15.95, or 6.2 per cent. It follows also, from the foregoing data, that the proportion of deaths to the number of cases treated was 1 to 56.52, or 1.76 per cent. Exclusive of yellow fever and cholera, the proportion of deaths to the number of troops was 1 in 24.05, or 4.1 per cent., and the mortality to cases treated 1 to 83.58, or 1.19 per cent.

## FEVERS.

Quarters. ....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	5, 179		4, 031		3, 783		4, 806		4, 450			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris continua communis.....	38	0	25	0	15	0	7	0	85	0	0 in 85	19
Febris intermittens quotidiana..	279	0	303	0	623	1	989	1	2194	2	1 in 1097	493
Febris intermittens tertiana....	266	0	346	0	554	0	608	1	1774	1	1 in 1774	399
Febris intermittens quartana...	2	0	18	0	10	0	8	0	38	0	0 in 38	8
Febris remittens.....	46	1	128	2	277	2	222	6	673	11	1 in 61	151
Febris typhus.....	33	4	28	7	7	2	14	3	82	16	1 in 5	184
Febris typhus icterodes .....	0	0	0	0	0	0	230	50	230	50	1 in 4.6	51
Total .....	664	5	848	9	1486	5	2078	61	5076	80	1 in 63	1141

With regard to this class of diseases, there is little to add to the details given in the special reports from the separate posts, if we except the following remarks respecting "dengue," at Fort Brown, by Surgeon N. S. Jarvis. In transmitting his report of sick for the third quarter 1850, that officer makes this statement: "Under the head of 'bilious remittent fever,' it will be observed that the number of cases constitute more than one-half of all the diseases reported during the quarter (38 cases, total reported 67). This complaint was that which is familiarly known as the 'dengue, or break-bone fever,' which last appellation is very characteristic of one of its most prominent symptoms. It appeared here as an epidemic in the early part of October, having previously travelled along the line of coast from New Orleans to Galveston, Matagorda, and Lavacca, to this place. In this respect, it seems to have differed somewhat in its line of march from its great predecessor, and perhaps progenitor in epidemic influences—the cholera—which took a direct course from New Orleans to this place; thus boldly leaping at one bound the Gulf of Mexico, as it had before wide and expanded oceans, in its mysterious and desolating career. The dengue continued to prevail during the whole month of November, and a few cases have occasionally made their appearance up to the present time. Few of the adult male population escaped an attack; whereas among women and children there was a remarkable exemption. \* \* \* \* The attack rarely consisted of more than one paroxysm, lasting about twelve hours, and followed by a remission or cessation of all the symptoms that marked the approach and presence of the fever. Notwithstanding the shortness of the paroxysm, the debility that followed was very great, and it was frequently several weeks before the patient recovered his former strength and vigor."

The fevers at Fort Brown appear to have partaken of the character of dengue during the following year (1851), particularly in the third and fourth quarters.

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	5, 179		4, 031		3, 783		4, 806		4, 450			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica.....	60	35	16	9	0	0	0	0	76	44	11 in 19	----
Diarrhoea.....	567	11	433	12	357	6	535	9	1892	38	1 in 50	425
Dysentery acuta.....	172	2	194	2	181	2	270	3	817	9	1 in 91	183
Dysentery chronica.....	11	3	16	4	14	4	9	3	50	14	1 in 3.5	11
Enteritis.....	4	0	2	0	3	0	6	1	15	1	1 in 15	3.3
Hepatitis acuta.....	1	0	8	1	3	1	2	0	14	2	1 in 7	3.1
Hepatitis chronica.....	0	0	1	0	0	0	1	0	2	0	0 in 2	0.4
Obstipatio.....	88	0	120	0	69	0	95	0	372	0	0 in 372	83
All other diseases of this system..	123	2	120	2	92	1	84	1	419	6	1 in 70	94
Total .....	1026	53	910	30	719	14	1002	17	3657	114	1 in 32	822
Exclusive of cholera.....									3581	70	1 in 51	804

It will be seen by this table that this region was visited by the Asiatic cholera; and, by referring to the consolidated abstract, it will be perceived that that disease was confined to the first and second quarters of 1849. Commencing with the post at the mouth of the Rio Grande, we proceed to give the remarks of the medical officers in relation to this epidemic.

Assistant Surgeon E. H. Abadie, in transmitting his report for the fourth quarter of 1848, from Fort Polk, mouth of Rio Grande, although no cholera had occurred among the troops, makes the following remarks:

"Toward the end of December, a schooner arrived from New Orleans, having on board forty Mexican soldiers with their families. The soldiers had served as allies to the United States forces between Vera Cruz and the city of Mexico. The vessel, having arrived during a 'norther,' was detained at the Brazos bar; and whilst lying at anchor a number of cases of spasmodic cholera occurred on board, one of which died in a few hours, before medical aid could be afforded. I received three of the cases in hospital; two of which recovered, the third died. No new cases of cholera have appeared."

In his report for the ensuing quarter (March, 1849), Assistant Surgeon Abadie makes the following statement respecting the progress of this disease:

"In my last quarterly report, I reported the appearance of spasmodic cholera among some Mexicans arrived at Brazos direct from New Orleans. Since that period, the disease has appeared in a very fatal form at Brownsville (opposite Matamoras), about the 20th of February. At Brazos Island and the mouth of the Rio Grande, the first well-marked and fatal cases occurred on the 27th February. Although a case of cholera proved fatal at this post on the 10th February, after four days' treatment, it was not characterized by the collapse, clammy sweat, sunken features, cold tongue, violent cramps, and peculiar rice-water discharges with intense thirst, that attend this epidemic. The first case thus marked occurred March 5th, in a man who had not been out of the place for months, about a quarter of a mile from the garrison; he died in about nine hours. Since that date, every few days similar violent cases have been seen and treated; four, out of eleven attacked, died—treatment having been resorted to; two



more of the 11 died, who did not call upon me for aid; 5 out of the number recovered. The cause of the disease has manifestly been present in and about the garrison for the last month; precursors of attacks, such as diarrhœa, dysentery, bilious colic, having come under notice for treatment, as well as attacks of cholera; the treating of which in the early stages has, doubtless, prevented the fatal termination of the disease in the garrison. In all the cases of diarrhœa treated, the discharges were white, like rice-water or unboiled starch. The treatment pursued has been the usual one—mercurials, local depletions, and counter-irritation being the basis of it. Calomel and opium, diffusible stimuli, sinapisms, frictions, hot applications by hot water in bottles, or heated bricks; the sinapised hot bath, when practicable, in the collapse; a good combination of stimuli in that stage being tinct: opii, et tinct: camphor: each one ounce; tinct: assafœt:, ess: menth: pip:, each two drachms; a teaspoonful of the mixture given every half hour. Local depletion by cups from the abdomen and epigastrium, drawing from twelve to fifteen ounces of blood, in the commencement of the collapse, has invariably promoted reaction, arresting the vomiting. In some cases, sulphuric ether added to the above combination has been very useful. The aqua ammoniæ in one-drachm doses, diluted in a few ounces of brandy toddy, with sulphuric ether, has proved advantageous. \* \* \* \* \* It appears unquestionable that the cholera was introduced into the Rio Grande by the company of Mexican allies already alluded to; their arrival at Brownsville, about the 24th January (at which place their baggage was opened preparatory to dispersing), being followed shortly afterwards by the appearance of cholera in its most aggravated form, no one attacked recovering. After raging with great mortality, instead of pursuing its course westwardly, it retrograded, and appeared at Brazos, the mouth of the Rio Grande, and this point, as already stated, where it rages at this date with unabated violence, apparently.”

Surgeon N. S. Jarvis, in transmitting his report of sick at Fort Brown, for the first quarter of 1849, makes the following remarks respecting cholera:

“By the above report, it will be observed that the two principal diseases enumerated are cholera and diarrhœa. The former was Asiatic or malignant cholera, which broke out in the town of Brownsville about the 22d of February, and in the garrison four days afterward. The latter is only separated from the former by a high board-fence; and its delay in attacking the troops may appear somewhat strange, considering the rapidity with which it spread in every part of the town within a few hours of its first appearance. It is true, a case occurred simultaneously in the garrison with the first case in town; but the subject, a clerk in the quartermaster's department, boarded and slept in the latter place, and may be fairly supposed to have contracted the disease there. It may be said to have reached its greatest severity about the tenth day from the period of its first breaking out, when the deaths averaged from ten to twelve a day, in a population not exceeding 600 souls. It continued to prevail as an epidemic for a period of thirty days, and in that space carried off 120 persons, or more than one-sixth of all the inhabitants. Among the victims, were two out of three of the physicians located in the place. The third was attacked, but fortunately recovered. The profession suffered equally on the other side, two having died from the same disease—one a Mexican, the other an American. It broke out in Matamoras about the same time it invaded our garrison, and for a period of twenty days raged with frightful severity. The deaths at one time amounted to over sixty a day in a population of not over 5,000 souls; and the whole number up to this period is said to exceed 1,000 in the town and its suburbs, or one-fifth of the inhabitants. Many who were seized by the malady, were left to their fate, their friends supposing all human efforts unavailing, having fled to avoid a similar infliction. This neglect, and an absolute want of medical aid in a majority of the cases, or proper attendance, may, in some measure, account for this fearful mortality. In the garrison, the whole number of cases up to the 31st of March, from the disease, as shown by my report, is eighteen, and ten deaths—a fraction over one-half. Three cases broke out subsequent to this date, two of which proved fatal within a few hours. The

subjects were a sergeant and his wife, who were attacked within twenty-four hours of each other, and died within the same period. These are the last cases of the disease that have made their appearance either in the town or garrison. The sergeant had recently arrived from San Antonio, and had been drinking freely up to the period of his attack. Although an interval of several days had occurred since the last case in the garrison and the recurrence of it in the case of the sergeant and his wife, it was characterized by the same severity and malignancy as in the earlier progress of the disease, and with equal rapidity towards a fatal termination. We may, therefore, presume that the specific causes productive of the disease still existed, and required only an exciting spark to light up its full force and virulence. Its ravages have proved equally fatal along the whole valley of the Rio Grande, passing with fearful and fatal strides from one town to another, some of which it nearly depopulated, and making sad ravages in the different ranches that extend along the banks of that river. At Camargo, it is supposed to have carried off one-third of the inhabitants, and the town of Roma was nearly abandoned by the inhabitants to escape a similar fate. Its transmission along that river may be easily accounted for by the number of emigrants passing up on their way to California, and who suffered severely at different points from the same pestilence. In regard to the state of the weather during the whole period of the prevalence of the disease, I would observe that it had been invariably mild and uniform, and remarkably dry for the season of the year. The prevailing wind, southeast, had continued steadily blowing during the whole period, with the exception of twenty-four hours, when it changed to a 'norther.' No rain, of any consequence, fell; and, in fact, I recollect of but one shower during the whole period. No atmospheric causes could be said to exist here, to account for its peculiar severity and mortality. The history of it here strongly corroborates the opinion that alluvial rivers and malarial regions are favorable localities for its propagation and extension."

Assistant Surgeon N. L. Campbell makes the following statement respecting the appearance of this disease at Ringgold Barracks, the first post above Fort Brown:

"On the 27th February, 1849, the United States steamer Corvette arrived at the post from Fort Brown, or Brownsville, at which latter place the cholera was raging. On her passage up the river, one passenger, an emigrant to California, died of cholera; another passenger was attacked, but recovered; and the mate of the boat was attacked by the same disease, and died soon after her arrival. Despite all remonstrances, the boat was permitted to come to the usual landing-place for the United States boats, near the centre of the garrison; and on the 28th, immediately after muster, the whole command was ordered to unload the boat. They did so, and the boat left on the morning of March 2d. At 10, A. M., on that day, a private of company G, 2d dragoons, was seized with vomiting, purging, and cramps; all indicating a genuine case of Asiatic cholera; *collapse* in this case went so far as to cause all *hope* (though not all exertions) to be abandoned; this man recovered."

This disease continued throughout the month of March, during which time twenty-three cases occurred in the command proper, of 207 officers and men; fourteen terminating in death. Of diarrhœa, forty (severe?) cases are reported in the same period.

Tracing the progress of cholera in its course up the Rio Grande, it is found that on the 11th of March, 1849, a squadron of dragoons left Ringgold Barracks, where that disease was raging, and arrived at Laredo, the present site of Fort McIntosh, on the 16th of that month. Assistant Surgeon Glover Perin reports that in this command of 100, there occurred fourteen cases of cholera, and thirty of diarrhœa, on that march of five days. Ten cholera cases were fatal. In the next month (April) twelve cases are reported, and eight deaths; of these last, four occurred in a detachment of troops on a temporary scout.

The cholera did not reach Fort Duncan, higher up on the Rio Grande. Forts Ewell and Merrill were not then established.



DISEASES OF THE RESPIRATORY SYSTEM.

Quarters.-----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength-----	5, 179		4, 031		3, 783		4, 806		4, 450			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica	54	0	26	1	26	0	51	2	157	3	1 in 52	35
Catarrhus-----	312	0	104	0	123	0	305	0	844	0	0 in 844	189
Phthisis pulmonalis-----	6	4	2	0	7	2	3	5	18	11	11 in 18	4
Pleuritis.-----	26	0	22	1	9	0	16	0	73	1	1 in 73	16
Pneumonia.-----	14	2	11	1	3	1	10	4	38	8	1 in 5	8.5
All other diseases of this system-----	9	0	7	0	10	0	9	0	35	0	0 in 35	8
Total-----	421	6	172	3	178	3	394	11	1165	23	1 in 50	261
Rheumatismus-----	211	2	157	0	108	0	171	0	647	2	1 in 323	145

SCURVY.—The troops on the southern frontier of Texas have been, to a very considerable extent, affected with scurvy; the usual and well-known causes of that disease having obtained to a great degree. In the frequent movements of the troops, and in the sandy and sterile nature of the soil in the vicinity of some of the posts, were found almost insuperable obstacles to the cultivation of gardens; while the long line of land transportation made it very inconvenient to keep up the necessary supply of potatoes and other vegetables from the principal depots. Of a command numbering in the aggregate 4,450, 510 cases of scorbutus occurred, of which three proved fatal.

WESTERN FRONTIER.

THE military posts established for the protection of the western frontier of Texas, extend in a line, running north and east, from Fort Duncan, on the Rio Grande, to the northern limits of the State. Although a very brief period has elapsed since the first occupation of this cordon, it has already been found necessary to advance the line further west, and consequently to abandon those first established. At present, not more than eight posts on this frontier are garrisoned; but the general abstract for this region, which accompanies this report, embraces the statistics of twenty separate posts or encampments, which have been more or less permanently occupied. The positions which have been most permanently occupied on the first line, commencing at the north, and going south, are Forts Worth, Graham, Gates, Croghan, Mason, Martin Scott, Lincoln, and Inge, with the towns of Austin and San Antonio. On the second line, further west, following the same order, the positions are Fort Belknap, Phantom Hill, Fort Chadbourne, Camp Johnston, Fort McKavett, Fort Terrett, Fort Clark, and Fort Davis.

Special reports respecting the diseases and topography of Forts Belknap, Worth, McKavett, and Terrett, and of the post on the Clear Fork of the Brazos, and Camp Johnston, have been received, which will follow in due order, after a brief notice of the localities of the remaining posts in this region, so far as the records afford the necessary material.



## FORT GRAHAM.

Fort Graham is situated on the east bank of the Brazos, in the northeast corner of a small valley, about half a mile from the river, which at this point forms a curve, bounding the valley on the south and west. To the east is a small creek, and immediately beyond a range of hills. On the north, at a distance of four hundred yards, is an elevated ridge, the commencement of the high prairie. The Brazos, at this point, owing to the elevation of its banks, rarely overflows. There is a belt of timber on the east and south banks, so dense as to form an effectual barrier against the extension of the miasm generated in the warm months. The small creek on the east dries up in midsummer, but the post is equally protected on that side by a narrow strip of timber.

## FORT GATES.

This post is situated on the north bank of the Leon river, a tributary of the Brazos, fifty-five miles south of Fort Graham. The immediate site is on the northern edge of a post-oak woods, which extends from the garrison to the river. Between the post and the river, which overflows its banks, are marshy strips of land, over which the prevailing southerly winds of summer blow. Assistant Surgeon Johns (from whose reports the above facts have been obtained) remarks that the post-oak woods are so situated as to afford no adequate protection from the "northerners" in winter, and to obstruct the southerly breeze in summer, without protecting the troops from the malaria arising from the river-bottom. He adds: "It would seem, from information derived from the citizens of Texas, and, at least, from the experience at this post, that, with a view to health, all locations should be made on the southern banks of rivers, in order that the prevailing winds may be obtained blowing towards, and not from, rivers and river-bottoms." The forces at this station suffered severely with fevers of the intermittent type.

## FORT CROGHAN.

This post is situated on the north side of a small tributary of the Colorado, about ten miles from that river. The immediate site is in a small valley, sloping gradually to the creek. Assistant Surgeon Crawford remarks, that in 1851 the portion of the command quartered near the creek had remittent fever, while that quartered higher up the slope escaped.

## AUSTIN.

The town of Austin is situated on the left bank of the Colorado river, about 400 miles from its mouth, though, in a direct line, not more than 140 miles from the Gulf of Mexico. Its elevation above the sea is, probably, 800 feet. The face of the country is undulating, not heavily timbered, but abounding in prairies and savannas agreeably diversified by groves of oaks, elms, pecan trees, &c., &c., and is unsurpassed in fertility and beauty. The south and southeast winds, which, during the summer months, sweep over the country with almost the uniformity of trade winds, constitute a remarkable feature in this climate, and one of vital importance on the score of health and comfort, under a temperature which would be otherwise extremely oppressive and enervating. Another peculiarity is the decided coolness of the nights of summer, which are uniformly of a refreshing temperature after 9, P. M., agreeably compensating for the heat of the days. (*From quarterly report of Surgeon George F. Turner, June, 1851.*)

## SAN ANTONIO.

The precise location of the buildings for military occupation is not known. It is believed that, in its general features, the locality may be compared with that of Austin. As a military post, it is on the highway to most of the forts on the western frontier of Texas, and to those in the southern portion of New Mexico. It is, at present, the seat of the headquarters of the military department of Texas.

## FORTS MASON, MARTIN SCOTT, LINCOLN, INGE, AND CLARK.

FORT MASON: on the Llano river, a tributary of the Colorado. It is in a hilly district, though not locally confined in its exposure. Its astronomical position is latitude  $30^{\circ} 48'$ , longitude  $99^{\circ} 15'$ ; the altitude above the level of the sea is 1,200 feet.

FORT MARTIN SCOTT: at Fredericksburg, on the Rio Pedernales, a branch of the Colorado. It is two miles from Fredericksburg, and seventy-five northwest from San Antonio. Its astronomical position is latitude  $30^{\circ} 10'$ , longitude  $99^{\circ} 5'$ ; altitude 1,300 feet.

FORT LINCOLN: on the Rio Seco, a branch of the Nueces river, fifty-five miles west of San Antonio. The district is quite open and arid, and the locality elevated, with free exposure south and east, and some protecting hills to the northwest. Latitude  $29^{\circ} 22'$ , longitude  $99^{\circ} 33'$ ; altitude about 900 feet above the sea.

FORT INGE: on the Leona river, about seventy-five miles southwest of San Antonio, and forty-five miles northeast of Fort Duncan. The district is moderately hilly, and generally wooded. Its astronomical position and altitude have been very accurately determined by Major W. H. Emory, of the Mexican Boundary Survey, to be latitude  $29^{\circ} 9'$ , longitude  $99^{\circ} 7'$ ; altitude 845 feet above the sea.

FORT CLARK: on the Las Moras, a small tributary to the Rio Grande, and about thirty miles north of Fort Duncan. Its immediate site is on the west bank of the river, on an elevation fifty feet above it. Latitude  $29^{\circ} 17'$ , longitude  $100^{\circ} 25'$ .

## FORT DAVIS.

Assistant Surgeon A. J. Foard, in a sanitary report of recent date, states: "Fort Davis is in latitude  $30^{\circ} 36' 23''$ , longitude  $103^{\circ} 36' 45''$ ; altitude above the level of the sea, 4,700 feet. The post is situated in a cañon about three-quarters of a mile long, filled with small oak trees. At the entrance, the cañon is about four hundred yards wide, gradually narrowing until at its termination it is only about twenty feet wide. The mountains on each side are of primary rocks, about 250 feet high, and very precipitous; their tops are slightly rolling, and covered with grass and a few oak trees, with boulders of various sizes scattered here and there. The source from which the troops are supplied with water is the Limpia—a small stream about a mile from the post. This water is very pure, and the stream is always cool, even in the hottest days. The climate is pleasant and salubrious. Sudden changes in the weather are not so common as in other parts of Texas, and, in consequence of the mountainous nature of the country, northerners are very rare. The hottest month of the year is June; the monthly mean temperature of which was, last year, 78.73, and for this year, 79.65. The mean temperature for the three summer months of last year was 76.97. The coldest month is January, the mean temperature of which this year was 36.73. The mean temperature for the three winter months was 42.78. Snow falls frequently, but not in large quantities. During the last sixteen months it has rained eighty-eight times, with a fall of only 30.12 inches of water. The prevailing winds during the summer months are S.S.W, and in winter N.N.W. There are no local causes of sickness at this place."

## MEDICAL TOPOGRAPHY AND DISEASES OF FORT BELKNAP.

By Assistant Surgeon E. J. Baily: 1852.

Fort Belknap is situated on the northwestern frontier of Texas, in north latitude  $33^{\circ} 8' 45''$ , and longitude  $98^{\circ} 45'$  west, nearly. It is situated from Fort Washita, Chickasaw nation, southwest 186 miles; from Fort Worth, Texas, a little north of west, 125 miles; and from Fort



Graham, northwest 110 miles. The post is on the north bank of the Red Fork of the Brazos river, about three-fourths of a mile distant. The site of the post is on the edge of a rolling prairie, which extends to the northwest and east many miles. To the south of the post, on the right bank of the river, is a low range of mountains extending up and down the river some distance. At a short distance from the post, the prairie terminates rather abruptly, and the river-bottom commences, which is between a quarter and a half mile wide; and, I should judge from its appearance, that it is seldom subject to overflow.

The river at this place is very brackish, and derives its name (Red Fork) from the color of its water. During the greater part of the year it is scarcely entitled to the rank of a river, and only presents such an appearance during the wet season.

The face of the country between this post and Fort Washita is a high, rolling, and beautiful prairie, presenting many views that cannot be surpassed in beauty; and I am told that such is the general character of the principal part of this country.

As yet, sufficient observations have not been made to determine its geological formations; but I may state that coal, iron, and lime are found in considerable abundance. The soil, to a considerable depth, is composed almost entirely of a light sand, which renders it unable to withstand drought of any duration whatever. So much is this the character of the soil, that our gardens cease to produce to any extent after the close of what may be termed the wet season.

The flora is numerous, and of great variety; but I have seen nothing, as yet, of any known medicinal virtues. Many varieties of cacti are to be found, and many of them beautiful.

Among the animals that are to be found here, may be mentioned the white-tailed deer, and antelope; the lober; grey, black, and prairie wolves; the tiger; wild and civet cats; raccoon; opossum; the common American rabbit; and a much larger one, known as the mustang or jackass rabbit. The black bear is also found here.

Among the birds, may be mentioned the following, viz: wild goose, summer duck, quail, wild turkey, mocking-bird, chapparral cock, raven, common crow, red-winged blackbird, buzzard, blue bird, martin, &c., &c.

In most of the rivers are to be found the catfish, gar, and soft-shell turtle; the latter is of very fine quality, and does well for the table.

Among the reptiles, are the rattle-snake—three varieties, the diamond, black, and ground; the cotton-mouthed moccasin, said to be more poisonous than the rattle-snake; the adder, the copper-head, the tarantula, centipede, lizard, pond frog, toad, and horned frog.

The different varieties of trees found here are the following, viz: live-oak, post-oak, red elm, hackberry, cottonwood, and mesquite. The live-oak is very small, and of no account.

Among the shrubs, are the sumach, and wild-plum bush; the latter bearing a very good fruit, and used a great deal among the Indians as an article of food; they also dry it for winter use, and this may be the cause the scurvy is less frequent among them.

Of the different varieties of grass found here, the principal are the common prairie, the mesquite, (of which there are said to be seven or eight distinct varieties,) and the gramma. Wild rye is found on the prairies, and wild oats on the tributaries of the Brazos river.

The water is limestone, containing much chloride of sodium and sulphur, either free or combined.

There is nothing peculiar in regard to the climate; the rain is confined principally to the winter, and early months of spring. From the middle of May until October, 1851, there was not a drop of rain, and during the last winter there was not much. From the middle of April until the latter part of June, of the present year, more rain fell than did during the whole of last year.

Northerns, which constitute the most disagreeable feature of this climate, generally commence about the last of October, and cease about the first of May.

The thermometer during the past winter, for one night only, fell to zero; and 98° has been the highest during the present summer.



There is no appreciable existing cause of disease here; and if any causes do exist, they are of an atmospherical character, combined with certain geological formations, which may aid in the production of disease.

The whole country is a high and rolling prairie, and there are no marshes in the vicinity of the post: much of the present disease, however, may be attributable to the manner in which the troops are quartered.

Our intercourse with the Indians has been rather limited, and we have learned little in regard to them; they are, however, affected with the principal diseases of the country, which may be put down in the following order of occurrence: diarrhœa, dysentery, and intermittent fever; and in many instances these prove fatal. They appear to have no remedies.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT WORTH.

By Assistant Surgeon Thos. H. Williams: 1852.

Fort Worth is situated on the south side of the west fork of Trinity river, Texas, latitude  $32^{\circ} 40' 11''$  N., longitude  $97^{\circ} 25'$  W., and was established about the 1st of June, 1849. It is built upon the northern extremity of an extensive high prairie, with a southern exposure, and at an elevation of one hundred and fifty feet above the ordinary low-water mark of the Trinity. Immediately above the fort, the "Clear Fork" of Trinity empties into the "West Fork;" the former running west by south, and the latter northwest by west. These streams form at their junction an extensive bottom, covered with a dense growth of trees and underwood. This bottom, following the course of "West Fork," extends from west to north, and from thence east of the post.

Southeast of the fort lies "Sycamore creek," a small tributary of the Trinity. On the south and southwest there is an extended prairie.

The general character of the country is high, undulating prairie, alternating with the rich and fertile bottoms along the water-courses. The soil of the prairie is argillo-arenaceous, with a substratum of limestone; that of the bottoms, sandy alluvion. The most remarkable features of this portion of country are the two great belts of forest, known as the Cross Timbers. The upper is about thirty-five miles north, and the lower five miles south of Fort Worth, and are composed entirely of post-oak. They extend from the Brazos across Red river, and are separated by a prairie, which, with the exception of clumps of mesquite trees, is entirely destitute of wood.

Settlements are rapidly increasing along the borders of the lower Cross Timbers, below the fort, on account of the convenience of timber for building, fencing, &c., and the abundant supply of water.

Scattered upon the surface of the prairie, near the fort, there is to be found a species of marble of the lumachella variety; along the ravines, and in the beds of the small streams that are dry in the summer season, are to be found a great variety of marine deposits. The animals that inhabit this section of country are: the antelope, red deer, black wolf, grey wolf, prairie wolf, foxes (grey and red), black bear, panther, tiger-cat, wild cat, lynx, polecat, opossum, squirrels (grey and red), hare, and Mexican hog. The buffalo have entirely disappeared, and but few droves of wild horses are now to be found near the post. Among the birds, we have the wild turkey, pinnated grouse, quail, turtle-dove, meadow-lark, mocking-bird, red bird, blue-jay, blackbird, red-headed woodpecker, flicker, prairie bird of Paradise, sparrow, turkey-buzzard, raven, crow, hawks, and owls, of different varieties.

The fish that are afforded by the streams are: catfish, buffalo, trout, perch, and sunfish.

The trees that appertain to the country are: red oak, burr oak, post oak, live oak, black-jack oak, elm, ash, pecan, sycamore, black walnut, box-elder, hackberry, cottonwood, and mulberry.

Of the plants growing in the vicinity, I have noticed the redbud, buckeye, flowering dogwood, woodbine, stag-horn sumach, smooth sumach, sweet-brier, blackberry, common elder, milkweed, wild morning glory, Indian turnip, black snakeroot, yellow ladies' slipper, red mulberry, wild plum, honey-locust, red root, two-leaved Solomon's seal, common sunflower, and dandelion.

The climate of Fort Worth is extremely variable: the summers intensely hot, and the winters, though generally mild, are subject to sudden changes of intense cold; for, from the elevated position of the garrison, we are exposed to the severe northers and sleets of the country. The prevailing winds during the summer are from the S. and S.E.; the temperature of which, during the dry weather of the months of July and August, becomes very much elevated in passing over the heated surface of the prairie; occasionally the wind changes to the N. and N.E., blowing over the extensive bottom of the Trinity, which change is always followed by an increase of intermittent fever.

The records of the hospital show that fever of an intermittent type is the prevailing disease of the post. The essential cause of the disease is the malaria arising from the Trinity river-bottom. This stream, during the heavy rains of the spring, attains a great height, overflowing all of its bottom, and, upon subsiding, leaves the washings of the soil loaded with vegetable remains reeking in the hot sun; to the miasmatic emanation of which the troops are not only exposed by the close proximity of the post, but have had to labor in the bottom every summer and fall, getting out timber for building purposes. The symptoms that characterized the disease were those usually presented, viz: the cold, the hot, and the sweating stages; the paroxysm being preceded by the ordinary preliminary symptoms of fever. In several cases the cold stage was entirely wanting, a profuse diarrhœa supplying its place, and which ceased as soon as the febrile symptoms came on; the diarrhœa not appearing again until the time for the next paroxysm. The course of treatment pursued was, where it was indicated, a purgative dose of calomel, rhubarb, and aloes, or compound extract of colocynth, followed by castor-oil or Epsom salts, to cleanse the alimentary canal and excite the functions of the liver. Two hours previous to the paroxysm, from ten to fifteen grains of quinine were given, which very seldom failed to arrest it; the first paroxysm being checked, the quinine was continued in doses of from three to five grains, three times daily, until the time for the recurrence of the next paroxysm had passed. Under this mode of treatment, no case ever terminated fatally. Of the 1,037 cases of intermittent treated, 720 were quotidian, 313 tertian, and 4 quartan.

An unusual number of cases of remittent fever occurred during the third quarter of 1851, attributable to the exposure of the troops on the weekly scouts to Red river during that period. The fever first made its appearance as intermittent, and afterwards assumed the remittent form before reaching the post, for the want of medical treatment. This tendency of intermittent fever to become remittent, if not promptly treated with large doses of quinine, I have noticed in a great many cases. There was nothing peculiar in the nature of these remittent cases; they were characterized by the usual symptoms of that disease.

Diseases of the organs of the digestive system have been produced by different causes—as unwholesome food, exposure to extreme heat and moisture, sudden changes of temperature, and dissolute habits. The troops at Fort Worth have been so often changed, that a great many of the diseases reported originated prior to the arrival of the patients at this post. Nine deaths have occurred since October 1st, 1849; of these, two were from typhoid fever, one chronic diarrhœa, one phthisis pulmonalis, one obesity of the heart, one melæna, one œdematous laryngitis, one chronic dysentery, and one scorbutus.

Fort Worth being a frontier station, and the country in the immediate vicinity but thinly settled, no "vital statistics" worth relating can be collected.

No "statistics of Indian tribes" can be given, as there are none living nearer the post than the upper Brazos river.



## MEDICAL TOPOGRAPHY AND DISEASES OF POST ON CLEAR FORK OF BRAZOS RIVER, (PHANTOM HILL.)

By Assistant Surgeon Alexander B. Hasson : 1852.

The latitude of this post is about  $32^{\circ} 30'$  north, and the longitude  $99^{\circ} 45'$  west of Greenwich, or  $22^{\circ} 45'$  west of Washington. These numbers are approximate merely, as no observations have been taken upon this immediate spot. Nor have any barometrical observations been made here; consequently, the height above the level of the sea is not yet determined.

Fort Belknap, on the Red Fork of the Brazos, is about seventy-five miles from this station, in a northeasterly direction; and Preston, the most western town on Red river, containing about 200 inhabitants, is probably 160 miles further, in the same general direction. This route, by the Red river, Preston, and Fort Belknap, is the one by which our supplies are at present received.

Austin, a town on the Colorado river, is about 250 miles distant to the south and east; and it is probable that ultimately a more accessible route for our supplies than the present one will be found in that direction, connecting this post directly with the Gulf of Mexico.

This post is situated between the Clear and Elm Forks of Brazos river, about a mile and a half above the point where they unite to form the main Clear Fork. At this point, the distance between the two streams is about a mile. Their average width is thirty feet; and, usually, they can be forded by a man on horseback without wetting his feet; but holes are numerous, where the water is much deeper. At high water, during a rainy season, it is sometimes impossible to ford them; but, usually, they soon subside.

The general character of the neighboring country is prairie. A few miles to the west, is a thicket several miles in extent, which consists of a low scrubby species of oak called black-jack, and multitudes of green briars, which render it almost impenetrable.

About thirty miles to the south is a small range of mountains, and also a few groves of small timber, mostly post oak and black-jack. Stunted mesquite trees are thinly scattered over the prairies, and a little timber grows upon the very verge of the streams, which consists principally of elm, pecan, and hackberry.

The post itself is situated in a grove of scrub oak, about five acres in extent, and surrounded by prairie. The scarcity and character of the timber offer many obstacles to the erection of quarters, and they are necessarily of a very temporary character. On the ridges and high-grounds, the soil is poor and thin; but in the bottoms, it is probable that fair crops of corn may be made by irrigation, or even without it when the season is favorable with regard to rain; this, however, will always be very precarious in this country.

This season, owing to the excessive drought, our gardening operations have failed; and even our melons, cucumbers, and other vines, are dying; yet, we are told by persons who reside in a neighboring portion of this State, that more rain has fallen this year than usual.

In the bottoms, is a deep bed of alluvium, composed principally of sand, red clay, and, more deeply, of blue clay. On the higher grounds the subjacent rock comes very near the surface, and consists of strata of soft sandstone and limestone—the latter containing ammonites. Coal, although found at Fort Belknap, has not yet been discovered here. There are no marshes nor ponds of standing water in this vicinity.

Our animals subsisted here last winter on grass alone; but they were in a very poor condition, and unable to perform much labor. The young mesquite grass began to show itself in February; in March, the trees were assuming a verdant hue; and in April, many flowers were adorning the prairies.

*Trees.*—As before stated, the principal trees which have been noticed here, are the post oak, black-jack, red elm, pecan, hackberry, and mesquite.

*Flowers.*—There have been noticed, of the natural orders: Asphodeleæ, Scrophulariæ, Onagrea, Cacti, Solanæ, Labiata, Malvaceæ, and Compositæ. The individuals of the latter order



are very numerous, and bloom comparatively early. Species of helianthus and aster were in full flower by the first of June. Wild-plum bushes, about four feet in height, are numerous; the fruit ripens early in June. A diminutive species of allium, which the men call "wild onion," was abundant early in March, but did not last long; and, as the men had been many months without fresh vegetables, they availed themselves freely of this luxury. The poison ivy (*rhus toxicodendron*) abounds in the thickets, and the men frequently suffer from its effects. There has been one instance of poisoning from eating a species of mushroom. The case, which in many respects resembled the symptoms of cholera, recovered.

*Mammalia*.—Those as yet noticed are the black bear, panther, big white or greyish wolf, prairie wolf, grey fox, fox squirrel, prairie dog, raccoon, skunk, hare, or jackass rabbit, fallow deer, antelope, field mouse, and bat.

*Birds*.—These are the bald eagle (*haliaetus leucocephalus*), turkey buzzard (*cathartes aura*), carrion crow (*cathartes atratus*), common buzzard (*buteo vulgaris*), common American crow (*corvus Americanus*), a species of goose, crane, and heron, great-horned owl (*bubo Virginianus*), little-horned owl (*bubo asio*), mallard duck (*anas Boschas*), green-winged teal (*anas Carolinensis*), blue-winged teal (*anas discors*), long-billed curlew (*numenius longirostris*), belted kingfisher (*alcedo alcyon*), night hawk (*chordeiles Virginianus*), wild turkey (*mealeagris Gallopavo*), American partridge (*ortix Virginiana*), pinnated grouse (*tetrao cupido*), kildeer plover (*charadrius vociferus*), other species of plover, meadow lark (*sturnella Ludoviciana*), chuck-will's widow (*caprimulgus Carolinensis*), swallow-tailed fly-catcher (*milvulus forficatus*), common crow, blackbird (*quiscalus versicolor*), summer red bird (*pyrranga aestiva*), common mocking-bird (*Orpheus polyglottus*), American robin (*turdus migratorius*), several species of woodpecker (*picus*), dove (*columba*), bunting (*emberiza*), finch (*fringilla*), and other small birds.

*Reptiles*.—The rattlesnake (very abundant), small ground rattlesnake, a long yellow snake called here the prairie racer, and one or two other undetermined species; the toad, tree frog, bull frog, horned frog, lizard, tortoise, turtles (hard and soft shell).

*Insects*.—These are numerous; among them we may mention the tarantula, scorpion, locusts, crickets, grasshoppers, butterflies, house flies, horse flies, mosquitoes, fleas, ants, and numerous bugs, worms, and flies that infest the gardens. The honey-bee was seen a few days since.

*Fish*.—Those as yet noticed are the catfish, mud cat, gar, sunfish, eel, minnows, bass, and a fish called here the "drum."

*Indians*.—Small bands of Caddoes and Wakoes live about seventy-five miles below, on the main Brazos. They have permanent villages composed of grass wigwams, of a conical shape, with a hole in the top for the escape of the smoke. They cultivate small patches of corn and melons.

The Witchetas are occasionally seen here; but the Indians who principally range in this vicinity are the southern Comanches. This tribe is purely nomadic. Their frail lodges are speedily erected wherever they stop, and are made of a few twigs or poles cut upon the spot, and scantily covered with skins, or, more frequently, with blankets and pieces of muslin procured from the whites.

Very few buffalo have been seen so far south as this place since the year 1837, and, as the Indians raise no corn nor melons, they are frequently much distressed for food. Besides the ordinary beasts of the chase, they subsist on mules and mustangs, or wild horses, which they catch on the waters of the Colorado, and south of that river. They also depend greatly on war, begging and stealing animals. Several bands of them came to this post last winter, and were furnished with provisions. They consumed all the soft parts of a beef, and readily devoured the entrails, without even placing them on a fire.

Mexicans, both adults and children, are frequently seen among them, who are, for the most part, prisoners taken in war; they appear to mingle on terms of perfect equality with their captors. This tribe is fond of carrying off children, for the purpose of recruiting their fast waning numbers, and for which the natural process seems inadequate.

In spite of all that is sometimes said about the effects of exposure in hardening the Indian's corporeal frame, it is probably true, as a general rule, that only the hardier constitutions survive the process, and many lives are lost during infancy, which, in a civilized community, would have been reared to useful manhood. Our interpreter tells me that among the Comanche women he has frequently known and heard of cases of death in child-birth, and that he has seen in the tribe many cases which he called rheumatism and consumption.

Venereal diseases, also, are very common among them. They have medicine-men, whose practice consists in the administration of herbs, and the performance of superstitious ceremonies. They are said to possess the knowledge of a plant which is an infallible cure for the bite of a rattle-snake, a very numerous reptile in this country; but I have not yet been able to procure any satisfactory information on this point.

I am not aware that the customs of the Comanches differ much from those of the wild prairie tribes generally. The dress of the men consists of buckskin moccasins and leggings, extending from the upper portion of the thigh down to the foot, which are sewed so as to fit tolerably close to the skin, and leave a wide margin of buckskin flapping loosely beyond the seam; a cloth is tied around their middle, and over their shoulders hangs a robe of skins or a blanket. The head is generally naked, and adorned with feathers; the hair is worn long; trinkets hang pendent from their ears, and their faces are daubed with paint. They pull out the hair which grows upon their faces, and even their eye-brows; but, in a few instances, where this practice is omitted, they have less hair upon their faces than the whites. The women wear tight-fitting leggings, like stockings, which extend only to the knee; a cloth around their middle, and over their shoulders a blanket which is strapped round the waist. They wear their hair short, and use fewer ornaments and less paint than the men. It is their duty to pitch the lodges, take care of the animals, and perform all the menial duties for the men.

In this tribe, as among Indians generally, polygamy is common.

The youngest children are carried about in a sack made of skins, with an opening for the head, which is suspended from the shoulders of the mother and hangs upon her back. On arriving in camp, this is frequently suspended from the limb of a tree, and the mother swings it occasionally as she performs her work.

The Tonkiways are a small band who live to the south of this post, in the vicinity of Fort Graham, and on the borders of the settlements. They are sometimes employed by the settlers to work upon their farms. I have been told by a respectable Texan that they are cannibals, and that their pregnant women have been known to cut the feet from dead bodies and eat them, under the belief that their children would thus be rendered great walkers.

It is a well-known fact, that they will eat almost anything, and that no carcass can be so old nor meat so putrid as to repel their appetite.\*

DISEASES.—The mean strength of the command, for the whole period of seven months, is 231; total number of cases for the same time is 293; consequently, every man has been reported sick once in every five months and a half.

There have been two deaths since the first of December—one from scorbutus, and one from pulmonary apoplexy.

The men have been kept at work all winter on fatigue and extra duty, and lived in camp; yet the diseases have been generally mild and readily amenable to treatment.

As the atmosphere of this place is uncommonly dry and free from paludal exhalations, it is probable that the number of intermittent cases would not have been so large had not our men, many of whom suffered from this disease while in camp during the summer near Fort Washita, been compelled to remain in camp at this place all winter.

After a rain, the evaporation is extremely rapid in this country: to which cause some writers have occasionally attributed this disease.

\* Several meteorological tables and an abstract of sick and wounded are omitted.—C.  
S. 96—48



There have been eighteen cases of scorbutus in this command since its arrival here, but there are none at present. Our gardens are yielding us little or nothing, and offer no prospect of vegetables for the winter. This is owing to the extreme drought, although persons from the country below us say that more rain has fallen this year than usual. Gardening operations in this country must always be very precarious.

Water from the creek was used by the men all winter; it is brackish, and when the weather became warm it grew offensive after standing a short time. A spring was then discovered, which has furnished us with sufficient water for the purposes of drinking and cooking; but it seems to be failing fast as the season grows dryer. If we can procure an adequate supply of good water, and make our gardens productive, I think this will prove a healthy post.

#### MEDICAL TOPOGRAPHY AND DISEASES OF CAMP J. E. JOHNSTON.

By Assistant Surgeon Ebenezer Swift : 1852.

Camp J. E. Johnston, Texas, lies in latitude  $31^{\circ} 30' N.$ ; longitude  $100^{\circ} 51' W.$ , and is elevated 2,100 feet above the level of the sea.

It is distant about 110 miles northwesterly from Fort Mason, 70 north from Camp McKavett, and 100 southwesterly from Phantom Hill, (S.W. by W.  $\frac{1}{2}$  W.)

The camp is situated on the south side of the North Concho river, on slightly undulating ground, rising 12 or 15 feet above the alluvial banks, in a valley commencing with the source of the river, and bounded on each side by ranges of high hills or mountains, which, diverging, give to it at this place a width of five miles, and lower down the stream much more.

The river rises in the mountains, runs S.E. 50 miles, and unites with the main Concho, a tributary of the Colorado, 18 miles from the camp. It is forded with facility, being in many places not exceeding 12 or 15 feet in width, and less than a foot in depth. Pools and rapids alternate with each other throughout its entire course. The water is rendered turbid by the alluvial nature of its banks, contains a slight trace of chloride of sodium, and is sometimes perceptibly brackish.

The banks of the river are in some places two or three feet higher than at a distance of two or three hundred yards, where the ground again rises and becomes undulating. These low places are converted by heavy rains into ponds of considerable extent, which, however, are soon drained by the porous nature of the soil, or evaporated by the uninterrupted rays of the sun. There are evidences of the river having overflowed its banks two or three years ago.

The soil of the valley, composed of alluvium, clay, lime, sand, and vegetable mould, is very fertile, and capable of supporting a luxuriant vegetation, while the hills are rocky and barren. Forest-trees are almost wholly confined to a narrow belt along the river. Rains are abundant for purposes of agriculture, and are not productive of disease. Winds are variable, and often high, from the open nature of the country.

*Geological character.*—In many respects this resembles in geological character all other portions of the high land of Texas, commencing with a chain of hills which, rising abruptly from the undulating prairie which comprises the middle portion of the State, extends westward and northward from near Fort Inge, San Antonio, Austin, and Fort Gates, having a horizontal stratification abounding in lime, quartz, sand, and clay, and containing fossil *testacea*. At Forts Croghan and Gates I found quantities of oyster-shells (*ostrea deltoidea*), in beds of marl and pebble, or in consolidated masses, which are found here, though not so numerous, and imbedded in strata of compact limestone. At the above-mentioned places I found also specimens of *ostrea carinata*, *cytherea exoleta*, and ammonites of large size.

The masses of granitic rock near the Colorado and in the Llano, between Fort Croghan, Fort Mason, and Fort Martin Scott, give evidence of recent igneous origin invading secondary formations, as does also the crystalline limestone.

That portion of the State bordering the coast is low, flat, and alluvial, resting on beds of hardened argillaceous marl and gravel. I was favored with specimens of the former more than



a year ago, by the kindness of Mr. Cooper, then engaged in boring an artesian well at Corpus Christi. The immediate neighborhood of the Gulf gives evidence of very recent formation; and many places of having been reclaimed from the sea, as it were, by an upheaving power.

I have made the above digression with reference to the relative age of this and other portions of the State.

*Geological observations.*—In a district comprising 60 or 70 square miles, extending from six miles above to six or seven miles below the camp, and of the width of the valley, I have made the following observations of the banks of the river and gullies, and the stratified rock cropping out from the hill-sides. Commencing with the top of the most prominent hill, and descending, I found as follows:

*Summit*—Large fragments of broken limestone, containing flints, vegetable mould, and finally broken stone. 1. Shelly limestone, invaded by a vein of flint, as if cooled from a state of fusion, an inch thick, superimposed upon and covering a stratum of shelly limestone; 2. Compact grey limestone, eight inches thick, with limestone abounding in shells some six inches in diameter; 3. Compact grey limestone, containing sand, pebble, and limestone containing shells; 4. Coarse yellow sandstone; 5. Fine yellow sand, with felspathic encrustation; 6. Coarse yellow sand, compact and hardened; 7. Reddish clay, sand, and loam; 8. Arenaceous or gritty marl; 9. Coarse reddish sandstone, or grit, with sand quartz, and a trace of oxide of iron and manganese. The base composed of broken rock, sand, clay, loam, pebble, peroxide of iron, and manganese.

Following the same course with hill No. 2, I found—

The hill-top composed of conglomerate. 1. Compact grey limestone, very thick; 2. Yellow sandstone, fifteen or twenty feet; 3. Conglomerate, abounding in flints; 4. Clay, loam, and pebble; 5. Yellow sandstone; 6. Indurated sand, clay, and pebble; 7. Clay, lime, sand, and peroxide of iron, and nickel; 8. Coarse red sandstone; 9. Fragments of lime, sandstone, &c.

In hill No. 3, nearly opposite the camp, distant about three miles:

*Summit*—1. A mass of grey limestone; 2. Coarse yellow sandstone, twenty feet; 3. Arenaceous limestone; 4. Conglomerate, flints, &c., fifteen feet; 5. Coarse red sandstone; 6. Clay, sand, and loam; 7. Coarse red sandstone; 8. Grey quartzose stone; 9. Broken limestone and flints.

In hill No. 4, the top consisted of—

1. Hardened marl, with shells and pebble, invaded by continuous veins of flint; 2. Conglomerate, very thick; 3. Compact grey limestone; 4. Sandy grey limestone; 5. Quartzose rock; 6. Fine bluish-grey compact limestone; 7. Conglomerate; 8. Dark grey sandstone; 9. Compact reddish limestone; 10. Coarse grey sandstone, lime, and pebble; 11. Compact grey limestone, containing small shells and crystallized sulphate of lime; 12. Conglomerate, very thick; 13. Vegetable mould, broken limestone, sand, and pebble.

The bottoms of the rivers, creeks, and gullies are formed of conglomerate, and their banks chiefly alluvium, loam, and pebble; the alluvium containing shells of existing species deeply imbedded. On Grape creek, about eight miles from camp, I found the east bank, for several hundred yards, composed of yellow sandstone more than thirty feet thick, and higher up the stream a large mass of pure white clay.

*Botanical features.*—The botanical expression of the country is plain and simple, undergoing but few changes. During the month of April the earth is clothed with verdure, and in May the hard-featured hills and the prairies are covered with flowers. The blue gentianæ, bright-yellow cysantha, and the snow-white, palm-like blossom of the tall-stemmed bear-grass mingle their bright colors with a carpet of dark green, here and there diversified by a miniature forest of pine-like acaciæ-form mesquite, and the taller pecan marking the river in its course. Other months are represented by the sunflower, poke-weed, cardinalis, thistle, and evening prim-roses, solidago and asters, and some members of the families Liliacæ, Labiatæ, Solanæ, Big-noneæ, Umbelliferæ, and Typhæ.

Pecan, (*carya oliviformis*), the most common forest-like tree, and attaining a large size, some measuring twelve and fourteen feet in girth six feet from the ground, skirts the river-banks, and grows upon some of the gullies and tributary creeks.

Live oak (*quercus virens*) abounds as a shrub in many places throughout the valley, from a season's growth—the most common, to five or six feet in height. Some small groves and insulated trees, which have been protected from the fires of the prairie, have attained a larger size; one near the camp measures thirteen feet in circumference four feet from the ground, another ten feet; the former being about forty feet high, the largest tree of the kind I have seen in Texas.

Mesquite, a variety of acacia, is more common, and seems to make greater resistance to the prairie fires than any other arborescent vegetation. Many places several hundred acres in extent are sparsely covered with trees having attained their ordinary growth, twelve or fifteen feet in height, affording the camp a supply of most excellent fire-wood. A small shrubby variety grows everywhere.

Black willow (*salix nigra*) is confined to the river, attaining sometimes a height of twenty or thirty feet.

Red mulberry, a small variety, we found in May bearing fruit.

I have seen a few isolated scrubby red cedars, and also a few stunted river elms.

*Prunus Americana* furnished us with some very good fruit in August.

A variety of grape, called in Texas post-oak grape, (I don't know why,) grows in the sand and silt along the gullies and creeks—more like a shrub than a vine, two or three feet high, and produces excellent fruit, from which I made very good wine.

The *Cactus*, or prickly-pear family, is represented by four varieties, the chief of which is the *cactus opuntia*; of the other varieties I have seen but few specimens.

*Fauna*.—The principal animals inhabiting this section of country, we may say are white-tailed deer and antelope; bears and buffalo are seldom seen. This valley is not, and does not appear to have been, their favorite range; but one of the latter, half-grown, and a very old skeleton of another, are all the evidences we have seen of them. Prairie wolves are numerous, and the large black and grey are sometimes seen, as also red and grey foxes and raccoons. Beavers have been sometimes trapped along the stream by the Delawares. Panthers, civet cats, wild cats, and long and short-tailed tiger cats, it is said, inhabit the river-bottoms.

The country, for more than thirty miles on every side, is dotted over with prairie-dog towns, numerously peopled—a district very probably destined to have no other population—presenting a picture of desolation the imagination can with difficulty conceive; their forsaken underground habitations become the dwellings of rats, squirrels and moles, mice, bats and hawks, owls, lizards and rattlesnakes; the latter in great numbers. Rabbits and hares are often seen; land tortoise are occasionally met with.

*Characteristics of climate*.—Meteorological observations have been made at this place during a period of six months (April to October, 1852). The thermometer was suspended from a tent-pole, and protected by two thicknesses of ordinary tent-cloth from the direct rays of the sun. The mercury attained the highest points on the 10th, 11th, and 12th of July. On the latter day, at 3½ P. M., it rose to 102°.

*Habits, diet, and condition of men*.—The soldiers occupy small or "common" tents, placed in the usual form of a camp; from two to four men in each. They have generally made for themselves bunks of grass and the branches and leaves of trees, which, raised a little from the ground, protected them from wet and damp; they also protected themselves from the sun by means of bowers made of bushes, supported by a kind of frame-work above their tents. Notwithstanding this, they were much warmer than those of the hospital, where the thermometrical observations were made.

During the summer the men wore their undress woolen uniform, having no other; and upon all military dress duty, the ordinary forage-cap and belts; many of the men were employed as



teamsters, in supplying the camp and the general depot with subsistence and quartermaster stores from the coast to San Antonio, and from the latter place here—a distance of more than 350 miles.

On account of an insufficient supply of timber, the troops were not employed in building houses and a fort; and as it was daily expected during the six months that the camp would be moved, the soldiers were not employed in "field-culture;" and the country being at peace and quiet, they were not sent on scouts.

The men have subsisted on fresh beef, pork, and bacon—the former being issued once in five days—hard bread, beans and rice, sugar and coffee; they have eaten no vegetables but prickly pear and poke-weed. In September, molasses, pickles, and dried apples were received, and issued in lieu of some portion of the ordinary ration.

The water used by the camp, from a small well near the bank of the river, contained a slight trace of iron, and in June had a temperature of 68°. The men, or some of them, drank whisky to excess, being somewhat of intemperate habits.

In June several men were relieved from their posts as sentinels, on account of the heat; but none in July or August.

The mean strength of the camp, consisting of five companies, the headquarters, and non-commission staff of the 8th infantry, averaged 9 officers and 159 men; total 168. There were also five families of officers and their servants—11 women and 20 children.

On the 30th of April there were on the sick-report nine men. From the 1st May to 30th September, 142 cases of disease were treated; of which 135 returned to duty, and 7 remained on sick-report—averaging one-sixth of the command sick each month.

During the period of nearly seven months, commencing March 20th (Assistant Surgeon Johns being in charge of the hospital), and ending October 13th, 182 men were returned to duty, averaging 6½ days' sickness; febris intermittens quotidiana, 9½ days; febris intermittens tertiana, 2¾ days; diarrhoea, 3 days; scorbutus, 17⅔ days.

Many cases of a scorbutic taint, with livid spots and spongy gums, were not received into hospital or relieved from duty, but recommended to cleanliness and a vegetable diet—prickly pear and poke-weed. They got well.

Diarrhoea usually resulted from imprudence of diet or drink, and was easily managed, requiring little else than a mild cathartic.

Some temporary ailments were prescribed for; the men, not being relieved from duty, were not put on my sick-report.

Intermittent fever has been the most prevalent disease of the command, arising from no apparent local cause, but rather from predisposition. Companies "K" and "G" came here from Fort Martin Scott in better health than the other three, "A," "C," and "I." In the latter company there have been 21 cases quotidian and tertian—half of the entire number reported. This company came here from Fort Gates, where intermittents had prevailed to a greater extent than at any other post in Texas.

The men comprising it were seized with a paroxysm from slight causes—exposure on guard or fatigue duty, atmospheric changes, wet and cold, eating prickly pear, or any slight imprudence of any kind.

A corporal and three men of company "I" were brought to hospital by their orderly sergeant, who reported the men as having been engaged the day before on fatigue duty—getting fire-wood for the camp; while out, they ate prickly pear, and on their return they had a chill. I have had similar reports from others.

Lieutenant C—— had been stationed at Fort Gates about a year; had had an intermittent eight months of the time, and was confined about two months to his bed with daily paroxysms, and which subsequently recurred at irregular periods of from five to ten days, continuing about the same period. These paroxysms occurred whenever exposed on detached service, or upon exposure of any kind. He was in the habit of taking eight grains of quinine almost daily, as a

preventive, and applied to me for a new supply of pills. I discontinued the quinine, and gave him guttæ xx three times a day of the following: R hyd: potass: ʒj, iodine gr. j, aqua font: ʒj. M.—and blistered the region of the spleen. He had, after commencing the above treatment, but one paroxysm, induced, as he informed me, by bathing in the river. Other cases I treated in a similar manner, with the same results. My success, however, I attribute more to rest, change of diet, and climate, than to any medical treatment.

Abscesses and ulcers do well; the sixteen cases treated averaged seven days. Fresh wounds require daily dressing to protect them from maggots, when there is no other necessity.

Sergeant W——, bit in the right hand by a rattlesnake, had his wound dressed constantly with lint saturated with liquor ammoniæ; notwithstanding which, the maggots got into it; they were, however, speedily removed by a dressing of calomel—a never-failing remedy.

In a case of idiopathic trismus, arising from exposure to cold, which terminated favorably, I think I was greatly aided by the administration of the fumes of chloroform. I have used this remedy in many cases, externally and internally, and with favorable results. In the case of a German laborer, of Fredericksburg, of intemperate habits, who had been wounded in the knee by a rifle-ball, breaking to pieces the patella, shattering the condyles, and fracturing the femur above the middle, I took off the limb at the upper third of the thigh about 36 hours after the accident, under the influence of chloroform, and never had an amputation to do better. This was done in December last, and the patient has long ago recovered. He had lost much blood, was exceedingly irritable, and, but for the aid of chloroform or a narcotic, I should have had trouble in controlling him.

*Indian tribes.*—The Indians which occupy this section of country belong to the class called *prairie or wild Indians*, which, including the northern tribes, number about 20,000, and are known by different names.

The Comanches proper are supposed not to exceed 9,000; of this number, about 500 have been present at councils, and visit the military posts. During the last six months, they have been almost constantly with us, a band remaining two or three days, and then giving place to another. I recognize among them the same familiar faces I have known three years. Their numbers do not increase, but perceptibly diminish. Two hundred warriors is the greatest number I have seen together, and but once.

*Origin\* and history.*—They have a tradition, that they emigrated about the middle of the fourteenth century from South America, and were called Pa-to-kahs; crossing the isthmus, they saw the “big water” on both sides; and pursuing slowly their progress northward, they met with many hostile tribes; among the number, they recognize the Lipans, who prevented them from making any permanent settlement till they arrived on the Rio Grande, where they remained in one place several years—they don’t know how many; it may be fifteen, or fifty; the former of which is most probable. They settled again, and remained about the same time at Presidio del Norte; after which, they proceeded northward to the San Saba, and the headwaters of the Colorado and Brazos. Here they found an excellent country—wood, good water, and luxuriant grass; game abundant, and the hunting-grounds unoccupied. They say the Great Spirit brought them here from the persecution of their enemies, and gave them this country for their possession and that of their children forever. They brought with them horses and mules. Had never seen whites, and were armed with knives made of buffalo ribs, clubs, bows, and arrows headed with flint and obsidian. They boast of being the peculiarly favored people born of the earth, assuming rank and precedence over all other tribes, whom they call strangers, and say to them “What right have you to talk?” “Did you come out of the ground?” They were prosperous and happy, were increasing in numbers and strength, and had enjoyed many years of peace; when the Spaniards, the first white people they had seen, came among them and built forts and churches. They received them as friends, and made a treaty, which

\* There are strong evidences of their originating from the southern tribes of Africa.



the whites soon broke, by enslaving some of their tribe, whose descendants, they affirm, are still held by the Mexicans as peons. War was declared in their councils, which resulted in the massacre of the garrison on the San Saba, but three or four escaping, and the breaking up of the settlements north of San Antonio. Since which time, till 1845, the Comanches held a very peaceable possession of their country, save some little annoyance from Texans.

To retaliate on the Indians for this act of savage inhumanity, the Spaniards invited all their chief men to Monclovia, to a great council of peace and amity. They caused them to be seated in a circle on the ground, which had been previously mined with gunpowder, which was then fired, killing many; the remainder were shot or otherwise put to death. Since then, war on the Spaniards and Mexicans has been interminable; they consider them their natural foes. The mounds or earth-works found about the country were built a long time ago by the Comanches as places of defence.

*Traditions.*—They have a tradition of a monster serpent—the cause of earthquakes and volcanoes—that devoured herds of buffalo and deer, and drank up rivers: and also of a raven, that talked to one of their tribe; since when, they have been unfortunate. Thunder, they believe to be the voice of a big eagle; and lightning, his breath, that changes the wind and makes it rain, the source of the tempest and tornado.\* Like other races and tribes of men, they have traditions of pestilence and flood, of fire-balls and dark days. The earth, they believe to be a great flat island, which they call *so-co-vie-ha-te*, surrounded by the “big waters,” which, when they terminate, change into clouds and mists that are constantly rising up to the sky, thereby preventing the sea from filling the rivers and rising upon the land.

When the earth becomes filled with one tribe speaking the same language, when wars are at an end, and there are not hunting-grounds for all, they believe the Great Spirit will destroy it by fire.

The moon, they believe to be a man who is periodically fat and lean; and the stars, some think, are good Indians who long ago died.

*Religion.*—They believe in a kind of trinity, composed of the earth, sun, and the Great Spirit; and include them all in their simple mode of worship. The earth is their steward, or immediate dispenser of all good and evil, (save the spiritual interposition;) gives them food, health and happiness, famine and disease. The sun is their mediator, through which they appeal to the Great Spirit, who dwells far beyond mortal vision or conception, and cannot be seen or heard. The Divine interposition may be felt for good or evil; directing the fatal shaft which kills their enemy; guiding the arrow or bullet harmless from their person; and, unknown, protecting them in hours of danger; or, withholding the rain, the grass withers; making their medicine-men and their charms and amulets powerless; bringing death to a favorite chief, squaw, or horse. They believe, while they are virtuous and good, according to their ideas of virtue and goodness, they will be prosperous and happy; and otherwise, with other results.

Their ancestors believed in a future state or condition, as do some of their oldest men; the general belief, however, is, that they die and there is no more of them. Their religious observances are simple and various, and connected with their daily pursuits. After a day's march, they pour water on their heads—a kind of libation or health offering; and whenever they smoke—two or three times a day, or oftener—they observe the following ceremony: One of a group of three or four takes from his bag tobacco and pipe; the latter being filled and lighted, he takes three or four whiffs, and, with much gravity, passes it to his chief, who does the same, and passes it on to his neighbor; and thus it circulates round till exhausted—each, in his turn, observing to puff the first smoke upward, as an oblation to the Great Spirit, and for the sky to give them rain; next, to the earth, to give them health, and grass to feed their horses and fatten the game; and, finally, they blow it over themselves, to protect their bodies from disease

\* The Ki-au-ways believe the bear to be allied to the human family, and will not kill or injure one, and they cannot be induced to sit on or touch a bear skin.

and wounds; this repeated, they continue smoking, after the manner of Mexicans, retaining the smoke for an instant in the fauces and air-passages, then letting it escape through the nose.

*Death and burial.*—When a Comanche dies, they burn his clothes and kill his best horse and dog, which, together with his implements of war and hunting, they bury in the ground with him. At night they run howling about camp, beating the tents with a bush. As soon as he is buried (they have no observance of position), they leave the place and do not encamp there again for at least six months. The Lipans, who plant corn and have villages, abandon them when one of their number dies, and never occupy the place again. They say the Great Spirit is angry; he has given us plenty of land; if we stay here, more will die; we must go.

The wife, relatives, and friends, mourn the departed by cropping their hair, and cutting the manes and tails of their horses, painting and otherwise disfiguring them; wailing or crying, and scarifying their bodies for several days.

*Marriage.*—To get a wife, an Indian has only to make a few presents to the father, brother, or nearest relative, who makes the proposal to the maid, and, if satisfactory, he takes her to his lodge or tent, and she becomes his spouse. Polygamy being allowed, he can have another if he desires, or, in fact, as many as he is able to buy. They are usually faithful, though we sometimes see women without noses, cut off for being otherwise. These Indians do not inhabit villages, plant corn, or herd cattle, but live a wandering life, almost daily in the saddle from their infancy; and, at the age of three or four years, will manage their horses on a march unaided. They seldom remain longer than two or three days in one place, on account of grass or the scarcity of game. In camp they live in tents made of dressed buffalo-skins, thin cloth, or bowers of bushes. They usually sleep in their blankets or buffalo-ropes on the ground, except in wet weather, when they make bunks of bark and bushes. They use but little clothing, and, in fact, in summer some of them go quite naked, while others wear a blanket loosely wrapped about them, or tied with a thong to their waists, which, when on horseback, falls over the saddle, and partially covers their legs. In winter they wear, in addition to the blanket or buffalo-robe, buckskin leggings and moccasins, and some a "hickory" or buckskin shirt. I have seen children in their mother's arms naked, save what covering they got from her blanket, and sometimes entirely exposed to the air when the thermometer was below 30°.

They wear huge ear-rings, and wristlets, breast ornaments of bones and pearl-muscle, and silver plates attached to a braid of hair extending from the top of the head to the heels. They may be seen sometimes in very ridiculous costumes, the cast-off garments of officers, soldiers, and citizens. To her usual costume, I have seen a woman add the full-dress cap and ornaments of an infantry sergeant, while her lord stood erect with conscious greatness, grave and dignified, in the undress coat and epaulettes of a dragoon-major, moccasins and spurs; some in a wool hat, shirt, and shoes; others in a vest, leggings, and spurs. They wear their hair long, loose, and flowing over their shoulders—except the old women, and apparently with them the older the shorter.

They subsist very poorly on such game as the prairies afford, the *condemned provisions* of military posts, roots, prickly pear, and wild fruits in their season. They frequently go three or four days without eating—not from choice, however, but from necessity. In the spring of 1850, a party of about 200 warriors arrived at Fort Martin Scott, on their way to San Antonio, to see General Brooke. Col. S——, in command of the post, had orders to issue rations only to chiefs and their families, which was wholly inadequate to their necessities, having fasted three days. Two horses, which had died several days before in the stables of the garrison, were found in a ravine, and, cutting off the flesh (in a state of decomposition) from the bones, they prepared it for food for supper and breakfast, and proceeded on their way. They eat a great deal when they have an opportunity, drink freely of water, and are learning to drink whisky; many drink it now, who would not three years ago. The Comanches are large and well formed. The following statistics of twenty men gives a fair representation of the tribe:



Names.	Age.	Girth.	Height.	Weight.	Names.	Age.	Girth.	Height.	Weight.
	Years.	Inches.	Ft. In.	Pounds.		Years.	Inches.	Ft. In.	Pounds.
Key-tum-sah .....	35	36	5 10 $\frac{1}{2}$	158	San-ah-co .....	40	35 $\frac{1}{2}$	5 7 $\frac{3}{4}$	143
Kai-se-va-do .....	40	39 $\frac{1}{2}$	5 10 $\frac{3}{4}$	202	Ka-kar-ra-way .....	38	38 $\frac{1}{2}$	5 11	187
Quin-ah-cho-co-pe .....	34	35	5 11 $\frac{3}{4}$	166	Pe-an-et-same .....	40	40 $\frac{1}{2}$	5 6 $\frac{1}{2}$	187
No-vat-sac .....	33	34	5 5 $\frac{1}{2}$	134	Se-to-vai-te .....	55	37 $\frac{1}{2}$	5 9	152
Pe-ze-yeo-ko .....	25	34 $\frac{1}{2}$	5 6 $\frac{1}{2}$	125	Po-ta .....	26	36 $\frac{1}{2}$	5 10	155
Wo-va-na-ti-ka .....	19	34 $\frac{1}{2}$	5 6 $\frac{1}{2}$	153	No name .....	33	37	5 10 $\frac{1}{2}$	158
No name .....	34	35	5 9 $\frac{3}{4}$	148	No name .....	26	38 $\frac{1}{2}$	5 9 $\frac{1}{2}$	153
No name .....	25	37	5 10	163	No name .....	20	36	5 8 $\frac{1}{2}$	161
No name .....	20	37 $\frac{1}{2}$	5 7 $\frac{1}{2}$	156	No name .....	23	37 $\frac{1}{2}$	5 6 $\frac{1}{2}$	153
No name .....	30	36 $\frac{3}{4}$	5 9 $\frac{1}{2}$	160	No name .....	25	36 $\frac{1}{2}$	5 9 $\frac{1}{2}$	160

Key-tum-sah and San-ah-co are chiefs of bands; that of the former numbering about 300, the latter 150. The ages above are the supposed ages of the Indians; they never know positively how old they are. Their hands and arms are comparatively small, and they have not great muscular strength; the women are short, thick-set, and proportionally stronger and more muscular than the men. They do all the drudgery, dress their food and skins, cook, pitch tents, take care of the horses, etc.

*Diseases and their treatment.*—Rheumatism and diseases of the lungs are the most common. For the former, they take a cold bath morning and evening; and local pains being severe, they scarify and cup. Of the latter class of diseases, pneumonia is the most fatal. Pleurisy may probably rank next, and many die of phthisis. For pneumonia and pleurisy they cup and scarify the chest, vomit and purge. For phthisis they do nothing when they consider the case as confirmed, beyond charms and amulets; and by these means I have never heard of a well authenticated cure. Intermittent and other fevers are not uncommon, though generally of a mild type. For these they vomit and purge, bathe in cold water, and cup for local pain. Children die of intermittent, sometimes also adults. Eruptive fevers are often fatal. When an individual gets smallpox, measles, or any contagious disease, he leaves, or is sent out of camp. They have no medical treatment. Diseases of the digestive organs are rare, for which they use purgatives. They contract syphilis and gonorrhœa in their intercourse with their Mexican neighbors, in the treatment of which they are not very successful; and I have not discovered that they have any active anti-syphilitic or anti-gonorrhœal remedies. I have seen them badly mutilated from the former, and have treated them for both. Cholera visited them in 1849, and killed many. For this they purge, and their patients die. I have seen two cases of almost total blindness from gutta serena, and no other diseases of the eye. They pluck their eyebrows as they do their beard. Notwithstanding their violent exercise on horseback, they do not seem to be subject to hernia or piles. I have seldom seen wild Indians with sores, carbuncles, and boils, and do not think they are common.

They pretend to have a certain cure for rattle-snake bite; but as their patients sometimes die, I have not taken the trouble to learn all the mystery. They suck the wound, and apply to it a kind of poultice, made by chewing to a proper consistence a root possessing mucilaginous properties, previously prepared by some cabalistic power. The patient is made to drink water in which a fire-coal has been quenched, as an antidote to the poison of the snake—as fire is life, and the virus death.

Gun-shot wounds they treat skilfully and with success. Props-na-qua-iss, or Buffalo-hump, about ten years ago, in a skirmish with a large body of Texans and their Lipan allies, was shot in three places—one with a rifle-ball through the shoulder, which broke the scapula; his squaw

sucked the wound night and morning for many days, and filled it with pith of weeds chewed to a soft pulp. He recovered with but slight deformity.

Qua-ha-ra-po-hip, or Antelope-trail or trailer, was one of the great many carried off by the very few who escaped being massacred by the Texans in one of their great fights, in which "no killed and wounded were left on the ground." He had his leg broken by a rifle-ball; it was dressed as in the former case, and supported in position by means of pieces of bark bound on with dressed deer-skin, which also served for bandage. He recovered with a straight leg, and, therefore, the surgery may be called good. They never amputate. Several similar cases I have known. They heal flesh-wounds by granulation. They mostly die in infancy, though many live to great age. Medicines affect them promptly.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT MCKAVETT.

By Assistant Surgeon S. Wylie Crawford: 1853.

**POSITION.**—Fort McKavett is situated on the right bank of the river San Saba, Texas, about two miles from its source, in latitude  $30^{\circ} 50'$ , longitude  $100^{\circ} 20'$ ; altitude above sea-level 2,060 feet. A small stream arises upon the western side of the hill, and, interposing between the post and the river, expands into a large lagoon, and finally discharges its waters by a narrow irregular channel into the river below. The fort, which is about 300 yards from the lagoon, and 500 from the river, is elevated 100 feet or more above its level, and is situated nearly north and south.

The river flows through several lagoons, or bodies of sluggish water, filled with aquatic plants, and lies in a valley about a mile in width. The position of the lagoons and course of the river will be better understood from the accompanying topographical sketch.\*

The prevailing winds during the hot months are from the south and southwest, across a dry and arid country. The period of the greatest rains is in the spring, during the months of February and March. To this, however, there are exceptions.

**GEOLOGY, ETC.**—The country around the post is highly calcareous, consisting of limestone, partly crystalline and partly magnesian. The face of the country below becomes, by degrees, irregularly hilly, until in the vicinity of the head of the river this constitutes its entire aspect. Stretching from north to south, in general length, these hills continue in broken and interrupted chains, and extend to the west until they reach the "Llano Estacado," or high staked plains, where, losing their irregularity, they end in a gradual slope which extends to the Rio Puercos and Rio Grande. Valleys exist here and there between the hills; and broken ravines, extending for miles, attest the existence of former water-courses. Above the present source of the river, the valley extends for twenty miles; and a dry bed continuous with the river shows evidently that the river at one time arose from the head of the valley.

Geologically speaking, the region consists of the upper secondary, or the substitute for the chalk formation in this country, and the lower tertiary. Here and there the secondary appears in small patches, and continues superficial. No evidences of primary formation or of volcanic rocks exist. These hills have been evidently upheaved by some cause too deep to affect powerfully the surface, and has, no doubt, occurred while covered by water. The hills have no regularity, are low, of almost uniform size, and composed entirely of limestone. Towards the southwest, and in the vicinity of the Llano river, these hills become higher, and of a rougher and more broken character; the upheaval was more extensive at that point. Without exception, these hills are barren and stony, and covered towards the south and southwest with thick growths of cedar.

The magnesian limestone, or dolomite, having the crystalline form of calc: spar, and mixed with calcareous flints, covers the surface of the hills, and occasionally the granular limestone is met with in large masses. I have also met with another variety, viz: a shell limestone, com-

\* This sketch is necessarily omitted.—C.



posed entirely of marine shells, from one to two inches in length. This, in many instances, is soft and friable, but again hard and compact, and breaking with a shining coarse fracture. The action of water containing  $\text{CO}_2$  upon the magnesian limestone, is everywhere evident; the carbonate of lime is dissolved, and the carbonate of magnesia left, giving the peculiar honey-combed appearance to the rocks.

There is no sandstone formation in the vicinity, nor any arenaceous deposits, that have yet been discovered, nearer than 35 or 40 miles, where there is a belt running from north to south. From the regular outline of the hills, there are no faults existing where an opportunity is presented to examine the succession of strata. The dry beds of former water-courses, and especially where the stream has passed between the hills and worn away the sides, present the only means for an examination. From an observation made upon a number of these, the succession seems to be as follows:

1. Superficial deposits; magnesian limestone; broken and disintegrated carbonate of lime; flints, entire and broken. 2. Boulders of limestone—principally the carbonate. 3. Clay, mingled with limestone and flints. 4. Blue and yellow clays; soft marls. 5. Marls, soft and hard; marine shells.

The stratum containing the fossils is the lowest point I have been able to reach. The organic remains are exclusively marine, and are highly characteristic of the chalk formation, viz: oolites, scaphites, hamites, as well as ammonites, belemnites, and nautilites; and also organic remains in the state of flint. In some situations the tertiary strata appear to rest conformably on this stratum containing the fossils.

Water (for ages, probably) covered the surface of this whole region. During that period, the alluvial deposits took place that now form the valleys, aided by the continued washings of the hills. A gradual subsidence took place, and the waters were drained off by the Gulf of Mexico. Dry beds of former water-courses are everywhere abundant.

The soil is highly calcareous, and in the valleys and on the flats highly arable, but superficial. The hills are nowhere susceptible of cultivation.

There are three distinct varieties of limestone, and of each of these we shall briefly treat.

They are: 1st. The carbonate of lime; 2d. The magnesian limestone; 3d. The shell limestone.

1st. *The carbonate of lime*.—This is found superficial, and also constituting the great mass of the hills. It is everywhere abundant, and is by far the most numerous of the varieties of limestone. It constitutes the majority of the tertiary formation. Occasionally crystals of the carbonate appear; among the fossils of the marl, these are very abundant.

2d. *The magnesian limestone*.—This is also superficial. It consists of carbonate of lime and carbonate of magnesia, intermixed with silicious grains. It varies in color; sometimes it is found of a light-grey color, and again approaching to a yellow. It is finely laminated occasionally. There are some bluish and slaty beds containing fossils, that probably belong to this limestone.

3d. *The shell limestone* is peculiar. Sometimes it occurs in masses—the shells composing the entire rock; again, the shells seem to have been deposited after the formation of the rock, and cover thickly its whole surface. Where exposed to the atmosphere, these rocks are soft and friable; others, again, solid and compact. It forms no continuous strata, but exists in separate masses, and is found principally along the water-courses.

The general surface of the country is composed of the above varieties of limestone. What we infer to be of secondary formation, crops out here and there. It is sometimes superficial. Along the river is an extensive tract composed of rock marl, and filled with marine fossils, possessing great interest. The same formation exists on the opposite side of the river, above and below, and again is found cropping out of the side of one of the hills in the banks of the river. It is all, doubtless, the same formation, and was deposited at the same period.

*The flinty formation* is scattered over the whole face of the country, and is found, also, deeply imbedded. The flints occur in nodular masses of irregular forms—rarely in contact. At the

head of the Llano river, where the side of a large hill had been washed so as to expose the strata to the depth of 200 feet or more, I observed a continued layer of flint underlying marl and marly limestone. In the vicinity of this post, at the base of a large bluff, I have again observed this flinty formation overlying the fossiliferous rocks. Externally, the flints consist of a white cherty consistency, and are variously colored. They are often imbedded in a thin crust of limestone. They are solid, and without crystals—sometimes hollow in the centre, from the decomposition of the organic nucleus. They consist of pure silex, oxide of iron, and lime.

The *physical aspect* of the country evidently points to the chalk formation, or its substitute, as its basis. There are no rocky eminences; no broken or precipitous hills; no volcanic or igneous rocks; everywhere the same gradual slopes—the same regularity of outline.

What we have denominated the secondary formation, crops out, as we have stated, in various places. From the following description, it will be seen that this is referrible to no period but the secondary; though the marine fossils, upon which the inference is based, may be identical with those of the lower marine formation of the tertiary. Among these fossils, however, the ammonite and belemnite, with a variety of scaphite, are very abundant. The ammonite is found from the size of a nummulite to nine and sometimes twelve inches in diameter. This chambered mollusc, as well as the belemnite, is highly characteristic of secondary formation. Both of these shells, with many other varieties, especially the "*flagiostoma spinosum*," the "*hamites intermedius*," the "*belemnites mucronatus*," and some species of scaphite, constitute large masses of rock. The cementing matter is a dark-blue marl, occasionally soft and pulverulent, but when exposed becoming hard and brittle. The rocks containing these fossils are found in some instances superficial. Huge boulders lie scattered upon the surface of the ground, composed entirely of aggregations of these fossils. Covering the surface of the rocks are deep depressions filled with beautiful crystals of the carbonate of lime, where the organism has crystallized out of the rock. There are but few flints connected with these. The ammonite exists as the "*ammonites catenæ*," as but few entire shells exist.

The list of these shells appears to be as follows:

1. The ammonites obtusus (most abundant); 2. The ammonites nodosus; 3. The belemnites mucronatus; 4. The flagiostoma spinosum; 5. The hamites intermedius; 6. The gryphæa incurva, of the oolite system; 7. Many species of productæ; 8. Inoceramus vetustus, of the mountain limestone; 9. Spirulæ; 10. Hamites, surrilites; 11. Reteposæ. There are, also, immense numbers of other shells of different species.

As has been stated, this fossiliferous bed is the lowest point we have been able to reach. Subsequent investigation may bring to light new and important facts relative to the geology of this region. From the premises we have laid down, however, we believe this region to be the upper secondary, with the substitute for the chalk, as proved by the organic remains it contains, and upon which the limited tertiary deposits were laid down. Among all the fossils that abound in this formation, I have as yet discovered no evidence of vegetable life; though I have no doubt that further investigation will be rewarded by such discovery. My own researches have not been sufficiently extensive to draw any positive conclusions.

There are no evidences of the existence of any of the precious minerals in this region; and, from the description given of it, this may readily be inferred. I would state, however, that in the vicinity of *Fort Croghan*, near the Colorado, there are indisputable evidences of the existence of *gold*—in fact, I obtained some specimens proving this—as well as indisputable proofs of the fact that *coal*, probably in large quantities, is also to be found at that place.

SOIL.—The soil of this region is highly calcareous, composed of lime with an admixture of decomposed vegetable and animal matter. It is in the valleys and along the water-courses only that the soil in this region is susceptible of cultivation; there, however, it is rich, and produces abundantly. No country in the world, probably, is superior to many parts of Texas in advantages afforded for raising stock. The grazing is everywhere abundant. Large plains covered with rich grasses stretch across the country in every direction, in the southern part; toward



the north these plains become smaller, and the face of the country more undulating; the hills dry, stony, and arid; and it is only in small patches that the ground can be cultivated. The great scarcity of water renders large tracts, that would otherwise be valuable, utterly uninhabitable; and this fact, joined to that of the want of timbered tracts, must prevent the country from ever being thickly settled. The soil of the bottoms, however, yields abundantly to cultivation. Near the head of the river is a small tract that was cultivated for the first time by the whites in 1852. The yield was abundant, especially in leguminous plants, the cucurbitaceæ, the cruciform, and labiate families.

FLORA.—The flora of this region is that which characterizes the south generally below 30°, modified by elevation and the character of the soil. There are but few luxuriant vegetable growths. The hills are scattered over with the stunted live oak (*quercus virens*) and water oak (*quercus aquatica*). To the south, about midway between the headwaters of the San Saba and Llano, thick growths of cedar cover the hills to the exclusion of all other trees. There is no cedar in the immediate vicinity of this post. Immense numbers of wild flowers cover the hills and prairies in every direction, among which are very many entirely unknown to science. I am now engaged in forming an herbarium, which will embrace the majority of these. As far as possible, I have ascertained the trees and plants peculiar to this region. There are a vast many others, however, that grow abundantly on the waters of the Colorado and Guadalupe, which do not appear upon the San Saba. Others, again, occur from the mouth of the San Saba to a considerable distance up the river, being found on its banks alone, but do not appear at its head-waters. The trees and plants in the subjoined list all occur in this vicinity, with few exceptions, which are specified. They have been arranged according to the "natural system" of classification.

There are some of the trees as well as plants, for which I have not been able to obtain the botanical title, and among these there is one deserving especial notice. It is called by the Mexican inhabitants the "mesquite tree." It is peculiar to this latitude, and grows abundantly in every part of Texas. It varies in height; in this vicinity it is, on an average, from 14 to 16 feet in height, and thinly scattered. It is always found upon flats and in bottoms, and is invariably characteristic of rich land. The mesquite grass, described below, grows upon the same soils. Cattle are exceedingly fond of it, and soon grow fat if suffered to graze steadily upon it. The fruit is a slender pod, ripe about July, containing several seeds, and filled with a sweet mucilaginous pulp. Horses can subsist on this pod. The leaves of the tree are bitter, slightly astringent, and tonic. Though this tree may be considered diminutive in size, the roots extend deeper into the earth than any other plant. Instances are known where the root has reached to the depth of 30 or 40 feet. This tree lives to a great age. It is not adapted to building purposes, but affords the very best fire-wood. It admits of a beautiful polish.

The following list has been drawn up under the two heads of—I. Exogenous or Dicotyledonous plants; II. Endogenous or Monocotyledonous plants.

The 1st is divided into three orders: 1. the Apetalous orders; 2. the Monopetalous orders; 3. the Polypetalous orders. The 2d is followed by the Cryptogamous or flowerless plants.

#### I.—EXOGENOUS, OR DICOTYLEDONOUS PLANTS.

##### (a) APETALOUS ORDERS.

Order *Cupuliferae* (oak family).—1. Live oak (*quercus virens*); 2. Post oak (*Q. obtusiloba*); 3. Water oak (*Q. aquatica*); 4. Black-jack (*Q. nigra*); 5. Black oak (*Q. tinctoria*); 6. Pin oak (*Q. palustris*); 7. Scrub oak (*Q. bannisteri*); 8. Red oak (*Q. rubra*); 9. Overcup oak (*Q. macrocarpa*); 10. Spanish oak; 11. An oak peculiar to the Cross Timbers, and called the Texas white oak.

Order *Juglandaceæ*, (walnut family).—1. Black walnut (*juglans nigra*), bottoms; 2. Butter-nut (*J. cinerea*), on the Guadalupe; 3. Pecan-nut (*carya olivæformis*).

Order *Coniferae* (pine family).—Sub-order *Cupressineæ* (cypress family).—1. Cypress (*cupressus disticha*); 2. White cedar (*juniperus*).

Order *Platanaceæ* (*plane-tree family*).—1. Buttonwood, false sycamore (*plantanus occidentalis*); some of the sub-order *Moreæ*.

Order *Ulmaceæ* (*elm family*).—1. White elm (*ulmus Americana*); 2. Slippery-elm, (*U. fulva*) on Guadalupe; 3. *U. alata*. Sub-order (*a*) *Celtideæ*.—1. Hackberry (*celtis crassifolia*).

Order *Salicaceæ* (*willow family*).—1. Several varieties.

Order *Phytolaccaceæ* (*poke-weed family*).—1. Common poke (*phytolacca decandra*).

Order *Lauraceæ* (*laurel family*).—1. Spice-bush (*laurus benzoin*).

(b) MONOPETALOUS ORDERS.

Order *Oleaceæ* (*olive family*).—1. Black ash (*fraxinus sambucifolia*); 2. Swamp-ash (*F. juglandifolia*).

Order *Asclepiadaceæ* (*milk-weed family*).—1. Common milk-weed (*asclepias cornuti*); 2. Some of the order *Apocynaceæ* (*dog-bane family*).

Order *Valerianaceæ* (*valerian family*).—1. Wild lamb-lettuce (*fedia radiata*).

Order *Compositæ* (*sunflower family*).—Sub-order *Tubulifloræ*.—1. Sunflower (*helianthus annuus*). Sub-order *Ligulæfloræ*.—1. Dandelion (*leontodon taraxacum*).

Order *Labiata* (*mint family*).—1. Wild sage (*salvia lyrata*); and many other species.

(c) POLYPETALOUS ORDERS.

Order *Zanthoxylaceæ* (*prickly-ash family*).—1. Prickly-ash (*zanthoxylum fraxineum*).

Order *Rosaceæ* (*rose family*).—Sub-order *Amygdaleæ* (*plum family*).—1. Wild cherry (*prunus Virginiana*), Colorado.

Order *Vitaceæ* (*vine family*).—1. Summer grape (*vitis æstivalis*); other species of *vitis*.

Order *Ranunculaceæ* (*crowfoot family*).—1. Celery crowfoot (*ranunculus sceleratus*).

Order *Umbellifereæ* (*parsley family*).—1. Parsley (*apium petroselinum*).

Order *Anacardiaceæ* (*cashew family*).—1. Poison ivy (*rhus toxicodendron*); 2. sumach (*R. glabra*).

Order *Sapindaceæ* (*soapberry family*).—Sub-order *Hippocastanceæ*.—1. Buckeye, flowers in April (*æsculus glabra*).

Order *Leguminosæ* (*pulse family*).—1. Red-bud (*cercis Canadensis*).

Order *Cucurbitaceæ* (*gourd family*).—1. Gourd (*cucurbita lagenaria*).

Order *Cactææ* (*cactus family*).—1. Prickly pear (*cactus opuntia*); many other varieties; cotton thistle (*onopordon acanthium*).

## II.—ENDOGENOUS, OR MONOCOTYLEDONOUS.

Order *Naiadaceæ* (*pond-weed family*).—Many varieties of this order.

Order *Smilaceæ* (*smilax family*).—1. Sarsaparilla (*smilax sarsaparilla*).

Order *Cyperaceæ* (*sedge family*).—Many varieties of this order.

Order *Gramineæ* (*grass family*).—1. Mesquite grass; (*a*) curly mesquite; (*b*) wire mesquite (blue when in bloom); (*c*) rye mesquite (red when in bloom). Also another grass, called the *gamma grass*. This grass is the best in all seasons. Cattle are very fond of it, and some fatten on its use. 2. Blue-eyed grass (*sisyrinchium anceps*); 3. Broom sage-grass (grows high; covers the hills in summer; blooms in July) 4. Tula grass (peculiar; culm thick and hard; panicked; grows in rich bottoms, and near water-courses).

The above list includes most of the trees and plants growing in this vicinity. There are, however, a great variety I have not been able to trace to any particular order, and which are, I have no doubt, new to science. A great many of these are peculiar to this region.

ANIMALS, ETC.—This region does not abound in animals. The sterility of the surrounding country will account for this, in a measure. There are no herds of wild cattle, nor any game in large quantities, with the exception of the wild turkey. They consist of—1. The deer, viz :



the common deer, the black-tailed deer (to the north). 2. The black bear. 3. The buffalo. 4. The antelope. 5. The wolf, viz: the black wolf, the grey wolf, the boyote wolf, the lobos wolf, (to the south). 6. The peccary, or wild hog. 7. The wild cat, viz: large yellow wild cat, small wild cat. 8. The fox—red and grey. 9. The mule deer. 10. Prairie dog. 11. Civet cat, so called—most probably the *genet*. I have dissected one of the animals, and find what is called the *civet* to be contained in two small circular bags lying upon each side of the genitals. 12. The raccoon. 13. The beaver. 14. The mole. 15. The gopher. 16. Field-mice—large and small. 17. Red and grey squirrels. 18. Panther, or Mexican lion.

REPTILES.—1. Lizards, viz: sand lizard, small wood lizard, large grey lizard, chameleon, and salamander. 2. Snakes, viz: rattle-snake, black snake, moccasin, water-snake, spotted snake, garden and chicken snake; and also a variety of other species. 3. Toads and frogs (common), horned toad.

BIRDS.—1. The rapacious kind, viz: the buzzard, the common owl, several varieties of the hawk, the ivy or screech-owl, an owl that inhabits the holes of the prairie-dog. 2. The gallinaceous or poultry kind, viz: the wild turkey, the quail (common quail, Mexican quail, mountain quail). 3. The pie kind, viz: the raven, the carrion crow. 4. The blackbird. 5. The field and meadow-lark. 6. The robin. 7. The snipe (several varieties). 8. The plover, (upland). 9. The dove. 10. The mocking-bird. 11. The red bird. 12. The humming-bird. 13. The prairie bird, or bird of Paradise. 14. The cow bunting (several varieties). Water-fowl, viz: 1. The common crane. 2. The heron. 3. The goose. 4. The swan. 5. The diver. 6. The duck (several varieties.)

CLIMATE, ETC.—The climate is mild, but subject to great extremes of temperature in the twenty-four hours, during the winter months, when differences of  $30^{\circ}$  and  $35^{\circ}$  occur frequently. Such changes are always felt acutely by convalescents. The period of the greatest rains is during the spring months. Through the summer, from the 1st of April until October, the heats are severe and continued, relaxing the system to a great degree, stimulating the organic functions, but depressing and sedative to the nervous system generally. From the stimulant influence upon the liver, and the increased call upon its function, bilious diseases are by far the most prevalent, and nearly all affections of an inflammatory character.

Miasmatic diseases have been very prevalent during the summer and fall months. The recent occupation of a new country, the exposure at night in tents, the exposure to the night air, and the existence of large bodies of standing water in the vicinity, have, no doubt, contributed to the existence of these affections. The command are now well quartered, and the observations of another year may show a great difference in the number reported. These fevers were of an exceedingly aggravated type. The impression upon the brain and nervous system was universally severe; the stomach and alimentary canal highly irritable; bilious vomiting and purging a constant attendant. There was in almost all the cases vigorous reaction. Convalescence was slow and protracted. The ordinary treatment of intermittents was adopted; arsenic especially, joined with quin: sulph: proved highly efficacious.

During the winter months pulmonary diseases have been most frequent. The system becomes so much relaxed through the summer, that a predisposition to colds and pulmonary affections is always excited upon the appearance of cold weather. As before observed, the changes of temperature are often extreme, and the men, when exposed, suffered more from cold than those living in a more northern latitude. During the whole summer the men were engaged in building the post; they were exposed all day to the heat of the sun; at night they slept in tents—many of them upon the ground; and many of them used alcoholic liquors in excess. Under these circumstances, it might naturally be expected that diseases would be prevalent, and fevers especially so; and such has been found to be the case. I am inclined to regard these causes as exciting to febrile diseases to a much greater degree than the presence of any bodies of water in the vicinity.

The cases of scurvy, reported in the second quarter, were (many of them) convalescents from

the epidemic that occurred at Fort Croghan, and who were sent to this post as soon as practicable.

The scurvy, however, appeared at this place also, in March and April; but, as I discovered the *fedia radiata*, or wild lamb lettuce, and the *phytolacca decandra*, or poke-weed, growing abundantly in the vicinity, the patients were put upon the use of these vegetables; the disease was checked, and soon eradicated. There have been no cases of scurvy reported since.

The cases of dysentery reported, were (most of them) produced by exposure to cold and dampness, and the use of alcoholic drinks. Among the number treated, two only proved fatal. These will be noticed subsequently. From the regularity enforced upon the soldier—his hours, his diet, his employment, as well as the attention given to the laws of hygiene—it is but reasonable to expect sound and continued health; but, in our country, the rules of the service impose upon him other and more laborious duties than those belonging to the mere soldier. The consequence of this is, that he loses any interest he may have had in his profession, which finally becomes distasteful to him, and he falls, in many instances, the easy victim of the liquor-sellers that crowd around the frontier posts in this country. It is this that so often crowds the hospitals and fills the sick-list. I regard liquor as the chief source of the diseases reported.

The military barracks consist of five large stone buildings, eighty by twenty feet; walls ten feet high. The hospital was completed in July. The command were in quarters by the end of December.

INDIAN TRIBES.—There are no Indian tribes located permanently in this vicinity. During the summer months, however, a small band of Comanches remained near us, and, from my observations of their diseases, I believe the following to constitute the principal number of affections among them: Rheumatism (acute and chronic), intermittent fever (rare), syphilis (secondary principally), pneumonia and pulmonary affections. The great majority die from pneumonia and affections of the chest. The lungs are, no doubt, weakened by the universal habit of drawing tobacco-smoke into them; it renders the lungs weak and susceptible to disease. Their low houses are heated to excess, and they lie upon the ground; and this, often when the body is relaxed and profusely perspiring. They are indolent, and, with few exceptions, they are physically weak. I believe the majority of the men die before forty. The women live longer. Their food is often insufficient. They sometimes live for days upon the fruit of the *carya oliviformis*, and frequently come into the post in an almost starving condition.

DEATHS.—There have been five deaths during the year ending March 31, 1853. Of these, one occurred soon after the patient arrived at the post. He had been ill with scurvy, and, not being sufficiently recovered, died from the effects of the journey. One, that occurred during the last quarter of 1852, was from suicide. The two that occurred during the third quarter of 1852 were the result of dysentery. In one, the typhoid elements were chiefly conspicuous, and there was but little or no reaction of the system from the commencement of the attack. In the other, the disease had been checked, but was immediately succeeded by an alarming anasarca, which only disappeared upon the renewal of the disease under an aggravation of all the symptoms, and under which the patient at once sank.

The remaining case was that of rapid phthisis pulmonalis, which arose from a neglected bronchitis; the patient being then on detached duty, and removed from medical aid.

BIRTHS.—There have been five births at the post during the year. Every labor has been difficult and protracted. Many were first children. With the exception of two cases, the head presented; but the position was invariably bad. Add to this, that the waters were discharged, and the uterus always strongly contracting.

In one case of footling presentation, I had difficulty in saving the mother; but I at length succeeded in making version by the head, and the child was born. It weighed ten pounds.

I would draw attention to the fact, that, in every case of labor here, the placenta has been retained eight, and sometimes twenty-four hours; and I find, upon inquiry, that this is frequently the case in this country. The uterus relaxes after labor, and, unless carefully watched, danger-



ous hemorrhage may occur. By careful bandaging, and exciting the uterus by frictions, cold water, and the internal use of ergot in small doses, frequently repeated, I have generally succeeded in preventing inordinate hemorrhage, and in delivering the placenta in the course of eight or fourteen hours.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT TERRETT.

By Assistant Surgeon W. W. Anderson: 1852.

This new post, on the North fork of the Llano river, is situated only a few hundred yards below the first permanent water of this stream, which is a large pond or pool having an elevation of thirteen hundred and twenty feet above the level of the sea, and is in north latitude  $30^{\circ} 28'$ , and west longitude  $100^{\circ} 21'$ . These items have been furnished me by Lieutenant Colonel J. E. Johnston, corps of topographical engineers, who some time ago made a tour through, and examined different points of, this region of country.

There are several pools of water about a mile above the camp; but these, I have been informed by persons who appeared to be familiar with the country, become perfectly dry during seasons of long-continued drought. The first permanent pool lies on the east side of a high hill, which is, on this side, exceedingly steep and craggy, in several places having a perpendicular ascent of thirty or forty feet, and in such places presents a naked surface of limestone rock. The height of the hill is about two hundred and fifty feet, and it rises by a succession of precipices with intermediate spaces of rapid slope, which give it, at a little distance, the appearance of having been artificially shaped into terraces. There is sufficient soil on the slopes, and here and there among the crevices of the rocks, for a scrubby growth of cedar, cactus, weeds, and some of the flowering plants of the country. The several strata of limestone lie very nearly horizontally, and differ considerably in hardness; the hardest, principally, I think, contains a good deal of silica embedded in it in small lumps. The pond at the foot of the hill is about three hundred yards long by sixty or eighty broad, and has no visible source or outlet, except after some days of rain, at which times springs gush out from the holes and crevices of the flat stratum of limestone rock forming the bottom of the pond at its head. The water has always a turbid appearance. About a hundred yards below the lower end of this pond the water again appears in a small pool, from which it flows in a considerable clear stream, and does not sink any more under ground, though it continues to form pools at short intervals, of various dimensions, and from three to twelve or fifteen feet in depth. The course of the river for several miles is north-easterly.

The post is being built upon a plain, some two hundred yards from the river, and on the east or southeast side. This plain extends in an almost uninterrupted level, perhaps a mile, down the river, and is from a hundred yards to a quarter of a mile in width, and bordered on one side by steep rocky hills. On the opposite side, about ten feet below this plain, and between it and the river, is another rough uneven flat, covered with smooth rounded stones—some flint, but most of them limestone. This flat is about one hundred and fifty yards wide at the post, and extends at least three-quarters of a mile down the river, but it becomes much narrower below, and the descent to it from the plain is not nearly so abrupt as it is at the upper part. During seasons of heavy and continued rain the flat is overflowed, as I have been told by a citizen of Fredericksburg, who said he had seen it under water; and there are evident traces of its occasional submersion, such as drift-wood and brush lodged among the green branches of trees growing on it; and the smooth rounded character of the stones arises, undoubtedly, from the action of water upon them. The plain upon which the post is located is covered with cedar thickets and clumps of live oak, with more open spaces here and there, having upon them a scattered growth of small mesquite. A month ago these open patches were literally covered with innumerable flowers of various kinds and colors, some of them very pretty. A bed of

yellow clay has been found, a few feet below the surface of the plain, mixed with a good deal of limestone and flint-gravel.

The water of the river is clear and cool, but holds in solution quite an appreciable amount of the carbonate of lime—perhaps as much as water, under ordinary circumstances, is capable of dissolving. Upon the surface of the pools, where there is little or no current, a thick scum of greenish moss forms several inches in thickness. The fibres of it are small, long, and thickly interlaced, so that a portion of it, when dry, looks very much like a piece of cotton wadding. The growth of this moss begins at the bottom of the water, where it is a brownish slimy mass with the sediment there; the specific gravity of this becoming in due time less than that of the water, it rises and floats on the surface, expands, spreads out its fibres, and finally assumes a yellowish-green hue. I cannot say, decidedly, whether this moss imparts any deleterious properties to the water or not; when disturbed, it gives off an offensive smell. Numerous bubbles of gas are set free when the sediment at the bottom is stirred up or loosened, and in some of the pools this gas has a decided odor of sulphuretted hydrogen. The common yellow water-lily also grows abundantly in the pools.

The surface of the surrounding country is extremely hilly and broken. The hills are all more or less stony, with rough cliffs jutting out here and there along their sides. Sometimes a bare level tract of rock is seen partly surrounding a hill, and frequently twelve or fifteen feet wide. Upon the top of a hill just back of the post, I have observed one such tract forming a complete circle, with a low mound of earth in the centre, upon which are cedar trees, shrubs, and flowering plants. The hills are frequently intersected by deep precipitous ravines, and the large valleys leading to the river are generally of the same rough precipitous character, being in many places impassable even to a footman. A few small oyster-shells are found on the tops of the hills mixed with the rock.

The cedar is almost the only tree which grows off from the river, and some of the hills and dry valleys are covered with dense thickets of it. The pecan, one species of oak—the chestnut oak, I think—hackberry, elm, and live oak grow along the borders of the river, and are rarely found except in the neighborhood of a permanent pool or running stream. They seldom grow to a large size, and are mostly crooked and knotty, and afford but indifferent timber for building purposes.

The hills approach the river very closely, and in no place, within three or four miles of the post, is the river-bottom much more than a quarter of a mile wide. This bottom, or strip of rich soil, generally lies only on one side of the river, the other bank being much higher and steeper, presenting a perpendicular bluff varying in height from ten to forty or fifty feet. The soil of this narrow bottom is, without doubt, very fertile, and it is more or less free from the rocks and stones which are thickly strewed over the surface of the ground elsewhere; but there is so large a proportion of lime in it, that small plants are very soon affected by a drought; the hardy weeds of the country even droop and wither under the scorching sun after a few weeks of dry weather.

There are many varieties of flowering plants and shrubs, some of which are new to me; and I regret that my knowledge of botany is too imperfect for me to attempt to classify them, or to give their proper botanical names.

One of the most beautiful and fragrant of the flowering shrubs is called by the Mexicans *frijoli* or *friolio*. It is an evergreen, having a bean-shaped blue flower in clusters, and its seed is a red bean, contained in a hard round or cylindrical undivided pod. I have been told by a Mexican guide, employed at Fort Merrill, that the Indians make an intoxicating liquor out of the beans before they become ripe and hard.

There are several varieties of cactus, one of which, the *petahaya*, bears a very pleasant fruit, which has the taste of a fully-ripe strawberry, with a slight pine-apple flavor.

The wild rye and oats are almost the only species of the grass order which are to be found,



and there is no great abundance of them. Of such plants as in common language are called grasses, scarcely a spear is to be seen.

Of wild beasts, and different kinds of mammalia, there are several species; but none exist in large numbers. The panther, leopard, wild and tiger cat, beaver, common red deer, and antelope, are occasionally seen. The black bear and wild hog (or peccary) are met with a little more frequently. There are two species of the hare, and the common (cat or grey) squirrel. The large hare (or jackass rabbit) is rather scarce; the common hare and squirrel are more abundant. The skunk (or polecat), rat, mouse, and bat, are also found.

Of birds, there are several varieties of the hawk, owl, crane, sparrow, and fly-catcher; one species of the eagle, the buzzard, common crow (or raven), the wild turkey, two species of quail, the dove, wren, rain-crow, red bird, and chapparal cock (or paisano). The last is a solitary bird, living in the thickets of small brushwood, and is not often seen. It runs very swiftly, but flies slowly, and only for a short distance; and, in open ground, might, I think, be easily captured by a dog. The crow has several notes, or cries, different from those of the same bird of the Atlantic States, and differs from it in other respects. It seems to approach, in its habits, more nearly to the buzzard tribe; is frequently seen with them, and never in large flocks. It also ascends to considerable elevations by wheeling in rapid circles, with motionless, outstretched wings, in a manner similar to the buzzard. Wild turkeys are quite abundant; but neither of the two kinds of quail is often met with. The humming-bird, and chuck-will's widow, besides two other species of night birds, which I have never been able to see, appear during the spring and summer. During the winter, numbers of robins are found among the cedar thickets, upon the berries of which they feed chiefly. The river and ponds are also, during the same season, frequented by several varieties of the duck—in considerable numbers, I believe.

Of reptiles and insects, there are numerous kinds: Snakes, lizards, terrapins, tarantulas, scorpions, centipedes, spiders, beetles, bugs, flies, mosquitoes, fleas, grasshoppers, bees, &c. Grasshoppers, bugs, and flies swarm in immense numbers. The gardens have suffered serious injury from the ravages of the grasshoppers and several kinds of worms.

Of fish, there are not many kinds: those which I have observed are the bass, perch, cat, sucker, gar, and minnow.

The climate, during most of the time that I have been here, has been mild and pleasant. March was rather a disagreeable month; there were frequent mists, with damp, chilly north winds. During the remainder of the spring, and the summer so far, the air has continued dry, except for a few days after a spell of rainy weather. The thermometer has seldom risen higher than 90 or 95° in the shade; and, during the day, there has been usually a sufficient breeze stirring to moderate considerably the sensible effect of the temperature upon the body. The nights have been quite cool, and without much dampness generally. Rain has been in moderate quantities, and tolerably frequent, so that there has been no long-continued season either of dry or of wet weather. I have been very much disappointed with regard to the health of the place. Dr. Wills, who was employed as medical officer to a company of Texas volunteers, and was stationed with it last summer some thirty miles below this point, gave quite a glowing account of the health of the country. He stated that there had been scarcely a case of sickness during the whole time (several months) that the company was at that place. There have been a number of cases at this post, during the last two months, of intermittent fever and diarrhœa, and a few cases of dysentery and mild remittent fever. I cannot discover that there is any undoubted source of malarious or miasmatic effluvia. The ponds are all filled with fresh cool water, which is constantly flowing to and from them, with the exception of the head pond, which has none of the moss upon it; and there has not been, at any time, sufficient rain to form standing pools in the hollows among the hills. The wind prevails almost constantly from the southeast, in which direction not one drop of water can be found nearer than the South fork, some eight miles off; and the decay of the shrubs, weeds, cactus, &c., growing upon the

hills and in the valleys, is not of that rapid character which is usually considered as necessary to the production of miasma. They wither and die, losing all their watery parts by evaporation, and the woody portion is all that remains to fall and decay upon the ground. It may be that the weeds and moss growing in the pools, although they are supplied by a constant stream of fresh water, are a source of disease, either by giving rise to a miasma from the decomposition of decaying portions, or by diffusing through the water some deleterious properties from their living parts. A fact, somewhat in favor of this opinion, is as follows:

Three men were detailed as gardeners early in May, and ordered to remain in the gardens at night after working in them during the day. The gardens are situated on the west side of the head pond, opposite to the high rocky bluff which I have described. One of these men had had several attacks of intermittent fever before going to the gardens, and continued to be subject to them for about a fortnight afterwards, when the rains caused a fresh cool spring of clear water to gush out of the rocks at the head of the pond. The three then used the water from this spring entirely, and the man who had been subject to the ague has, since that time, been no more troubled with it. The other two have been free from all fevers since they first went to the gardens. I have been attacked with intermittent fever twice during the last five or six weeks, although I escaped entirely at Fort Merrill, where, I think, I exposed myself much more than I have done here, in hunting and fishing, at all seasons and times of the day.

The position of the post is rather low, and though the nights cannot generally be considered damp, still I think that the atmosphere would be more dry, and there would, undoubtedly, be a freer circulation at all times of the southeast wind, at a little greater elevation. The stony, rough character of the hills, and distance from water, I believe, were the chief objections to the selection of a more elevated position. The climate, mode of life, diet, &c., have also some share as predisposing and exciting causes of disease. At least one-half of the command is composed of recruits lately arrived, a large majority of whom, I have no doubt, are unaccustomed to this climate.

A large number of the men have been on extra duty, engaged in hard labor, during which they have been necessarily exposed to the burning rays of the sun for several hours of the day. After the fatigue of the day, they retire to sleep with weary bodies, and under garments more or less saturated with perspiration; which conditions render them peculiarly liable to be affected by changes of temperature—and there is a decided difference between the days and nights. For several hours before sunrise it is very cool, sufficiently so to render a blanket necessary for comfort. A plentiful supply of fresh beef, and a considerable quantity of vegetables from the gardens, have been furnished to the companies, but not enough of the latter to render the diet suitable to the climate, in my opinion; and therefore I think the diet may be regarded as having been, in some measure, a predisposing cause of inflammatory and febrile diseases.

The Indians, as far as I have been able to ascertain, enjoy good health during the warm seasons, and are then subject to but few diseases. On my arrival here, in March, I learned from some of the chiefs of the Lipans, who live more in the vicinity of the post and visit it more frequently than any other tribe, that during the winter they are subject to a disease which is quite serious and fatal among them. They are attacked with cough and spitting of blood, and frequently die in a few days. From their accounts, I suspect the disease to be pneumonia. There are no white settlements between here and Fredericksburg, or in any direction, that I am aware of, within eighty or a hundred miles, with the exception of military posts.

About a month or six weeks ago, a whisky-dealer from Fredericksburg squatted within two or three miles of us, and has disturbed very much the quiet, orderly condition of the post, by retailing liquor to the soldiers; and not a few of the cases of sickness may be traced to an excess in drinking since his arrival. The traffic has also been extended to the Indians, and numbers of them have been seen around the post and along the road leading to the whisky-shanty in almost every stage of intoxication. If continued, this state of things may lead to some unpleasant or fatal consequences; and there is no law in the State by which this nefarious traffic



can be stopped. The Indians were of the Lipan tribe, who, as I have mentioned before, visit the post in small parties every now and then, and have always shown a desire to keep upon friendly terms. I have not heard of any marauding excursion having been made by any party of them upon the settlements since our arrival here.

## DISEASES.

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	6,233	4,229	57	678	9
Second quarter.....	6,560	5,626	89	857	13.5
Third quarter.....	6,277	6,990	24	1,113	3.8
Fourth quarter.....	6,225	6,486	177	1,041	28.4
Annual ratio.....	6,324	23,331	347	3,689	54.8
Exclusive of cholera.....	-----	23,051	174	3,645	27.5

The preceding table, compiled, as usual, from the general abstract for this region, shows that the relative proportion of cases of disease to the number of officers and enlisted men was 3.68 to 1; and that the corresponding ratio of deaths was 1 in 18.22, or 5.4 per cent. It follows, from the same data, that the proportion of deaths to cases was 1 to 67.23, or 1.48 per cent. Exclusive of cholera, the proportion of deaths to aggregate mean strength was 1 to 36.34, or 2.7 per cent.; and to cases of sickness, 1 to 132.48, or 0.75 per cent.

## FEVERS.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	6, 233		6, 560		6, 277		6, 225		6, 324			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris congestiva.....	2	0	0	0	0	0	0	0	2	0	0 in 2	0.3
Febris continua communis...	1	0	28	2	109	0	30	0	168	2	1 in 84	26
Febris intermittens quotidiana	434	0	680	0	1375	1	1264	0	3753	1	1 in 3753	593
Febris intermittens tertiana	475	0	904	0	1353	0	1260	0	3992	0	0 in 3992	631
Febris intermittens quartana	43	0	80	0	29	0	63	0	215	0	0 in 215	34
Febris remittens -----	38	2	62	1	314	1	93	0	507	4	1 in 127	81
Febris typhus.....	3	0	2	1	1	0	8	1	14	2	1 in 7	2
Febris typhus icterodes.....	0	0	0	0	0	0	1	0	1	0	0 in 1	0.1
Total -----	996	2	1756	4	3181	2	2719	1	8652	9	1 in 961	1368

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	6,233		6,560		6,277		6,225		6,324			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica.....	0	5	84	35	0	0	196	133	280	173	1 in 1.6	
Diarrhoea.....	439	10	731	13	598	2	688	3	2456	28	1 in 87	388
Dysentery acuta.....	138	5	142	1	208	3	265	5	753	14	1 in 54	119
Dysentery chronica.....	58	3	26	1	16	1	51	4	151	9	1 in 17	24
Enteritis.....	10	0	3	1	5	1	11	2	29	4	1 in 7	4.5
Hepatitis acuta.....	12	0	6	0	8	0	5	0	31	0	0 in 31	5
Hepatitis chronica.....	10	1	5	0	2	0	3	1	20	2	1 in 10	3
Obstipatio.....	100	0	243	0	213	0	121	0	677	0	0 in 677	107
All other diseases of this system .....	89	3	166	2	164	1	99	2	518	8	1 in 65	82
Total .....	856	27	1406	53	1214	8	1439	150	4915	238	1 in 20.6	777
Exclusive of cholera.....									4635	65	1 in 71	733

It will be perceived, from the foregoing table, that cholera has prevailed to some extent on this frontier. The disease appears to have been confined to the 8th infantry, on its march to San Antonio from New Orleans; to the troops encamped at or near San Antonio, and particularly to the 3d infantry at Camp Salado. The disease made its appearance in some of the villages between San Antonio and Fort Inge, but did not reach that post, nor does it seem to have affected the troops at any of the forts proper on this frontier. The following history of this epidemic, as it affected the 8th infantry, is from the official report of Surgeon Madison Mills, for the quarter ending December 31, 1848:

"The 8th regiment of infantry left Jefferson Barracks on the 24th of November, and reached New Orleans on the 1st of December; remained there under sheds till the 12th of the same month, when it embarked on steamships (New Orleans and Telegraph) for Lavacca, Texas, where it arrived on the 15th. The troops were not all disembarked till the 19th. A camp was established one mile and a half from Lavacca, on the borders of a brackish bayou. On the 21st, the right wing was advanced twelve miles, for better water, wood, and shelter. On the night of the 21st, the cholera showed itself in both camps; and by the morning of the 22d, had attacked more than one-eighth of both commands. I had no assistant; and the commanding officer having sent in for medical aid, the sick at Lavacca were put under charge of Drs. Johnson and Dallam, and I was ordered to the camp, twelve miles distant. The disease continued with great violence during the 22d, 23d, 24th, and 25th, when it began to abate; by the 30th, it had entirely subsided. The mortality has been frightful. There have been 133 deaths out of 196 cases. The symptoms were more like those produced by an over-dose of tartrate of antimony than anything I can compare them to. I observed one symptom which I have not seen mentioned by any writer on this subject—that is, swelling, and in some cases paralysis of the tongue. This symptom appeared in a great many cases. The usual premonitory symptom (diarrhoea) did not show itself generally as a first symptom in those attacked during the first 48 hours; after this, it was usually observed first, though not in all cases. On its first appear-



ance, the order of symptoms was generally as follows: Severe cramps in the stomach; coldness of the surface; vomiting; cramps in the extremities; and diarrhœa last. Various modes of treatment were tried—as calomel, camphor, and opium; calomel and Cayenne pepper and opium; assafœtida, opium, and quinine in various combinations, with sinapisms and vesications. Injections of tinct: assafœtidæ and tinct: opii et camphoræ; and in the latter stages, brandy and quinine, in liberal doses; all of which appeared of little benefit. The only thing that appeared to do much good, was external warmth. From the unfavorable circumstances under which we were placed, it was difficult to apply this remedy. The command at Lavacca was in tents till the 23d, exposed to one of the severest “*northers*” known in Texas, with but little wood, and nothing to break the force of the winds which swept over the prairie most furiously. The other command was in tents throughout the whole prevalence of the disease. From the morning of the 22d to the evening of the 24th, the tents were covered with sleet, and the whole country was enveloped in a dense fog. From the first landing of the troops till the breaking out of the epidemic, an influenza prevailed generally in the regiment; few escaped it, though there were not many who came under treatment.”

The troops which thus terribly suffered arrived at Camp Worth, in the immediate vicinity of San Antonio, on the — day of February, 1849. The time when this disease appeared among the citizens of San Antonio is not stated in the official records; though on the 7th of May, Surgeon J. J. B. Wright, in reporting the death of General Worth by this disease, mentions its having been prevalent there since the 11th of April; and adds: “This town suffered in an extraordinary degree from the cholera which prevailed in 1833. Its ravages are fresh in the recollection of the Mexican portion of the population, a great majority of whom fled from the place at its approach. A large proportion of those whose courage permitted them to remain, or whose inability prevented their leaving, have become victims of the epidemic.”

The appearance and course of this epidemic at the encampment of the 3d regiment of infantry, are fully described in the following letter from Assistant Surgeon L. H. Stone to the Surgeon General:

“CAMP SALADO, NEAR SAN ANTONIO, May 25, 1849.

“SIR: I have the honor to report that this command, composed of six companies of the 3d infantry, has been visited the present month by *cholera*, with nearly the usual results of that disease.

“The first case occurred on the first day of this month. The formal onset of the disease was preceded some twenty hours by a diarrhœa, when profuse vomiting and purging of the characteristic discharge (having the appearance of water in which rice has been washed) commenced, attended by painful cramps in the stomach, calves of the legs, thighs, and arms—especially the flexor muscles of the fore-arms. The eyes had a dull, watery, and muddy appearance, with a contracted, ill-defined pupil. The features became sharpened, and the entire body was blue, shrunken, shrivelled, cold, and clammy. The hands and fingers shrunken and sodden. The tongue gave to the finger a cold and disagreeable sensation. The patient complained of severe pain in the stomach, loins, and limbs; of insatiable thirst; and a burning heat in the stomach, and distressing heat of the surface of the body; although to the hand it had the cold feeling of a dead body.

“This case will serve as a general type of the cases which followed, although many differed from it in many particulars. In some, the perspiration was more profuse; in others, the vomiting; and in others, the purging; but *in all*, the strife seemed to be *to force the watery portion of the blood from the body*; and in this, every organ, except the kidneys, capable of throwing it out, was actively employed. There was in this case an entire suppression of urine for thirty-six hours, commencing with the attack.

“The treatment ordered was: internally, one grain of calomel, one of opium, and one of acetate of lead, repeated every hour. Assafœtida was also given freely. Externally, a large warm

sinapism was applied to the epigastrium, and diligent friction to the limbs with the palm of the hand. The patient was allowed to drink small quantities of cold water frequently.

"The pulse at the wrist was at no time imperceptible, though, for about two hours, it required considerable care to detect it.

"On the third day the patient was so far recovered as to be able to walk about the door of the hospital.

"On the evening of that day, the stream on which the camp is situated suddenly rose about twenty feet, and flooded the camp. Most of the command were obliged to swim in escaping from camp to the higher ground on the prairie. All were wet, and lay all night on the prairie, without tents or other covering, during a heavy rain. The next day was one of great fatigue for the men. On the second day after, three cases of cholera occurred; on the third, five; on the fourth, eight; and so on. The last case occurred on the 15th.

"Among the enlisted men there were *seventy-five* cases, of which *twenty-eight* died, and *forty-seven* recovered. No officer had the disease, although most of them, and nearly every soldier in the command, were more or less affected by the epidemic condition. Probably one-half of those who escaped an attack would have had the disease but for prompt treatment, as scarcely a man escaped an attack of diarrhoea during the prevalence of the disease.

"Most of the cases presented the usual symptoms, viz: vomiting, purging, cramps, profuse perspiration, and collapse. Some few, however, differed in one or more particulars. Two cases occurred in which there was no diarrhoea; and in these the stage of collapse was of shorter duration than in most of the others, and the perspiration soon became warm.

"In two, the cramps were attended with violent general convulsions, so as to require the united strength of four or five men to hold the patient. Both of these patients were temperate, vigorous, and, previously, healthy men.

"The suppression of urine was a uniform symptom. The treatment pursued in the disease has been pretty uniform, except that, in a portion of the cases, it has been commenced by a large dose (twenty or thirty grains) of calomel, and a full dose (one or two grains) of opium. It has consisted of cupping to the epigastrium; one grain of opium, one of camphor, and one of acetate of lead, every hour or half hour, according to the urgency of the vomiting and purging. In those cases in which the calomel was not given at first, one grain of that article has usually taken the place of the camphor.

"Dry rubbing with the palm of the hand over the seat of the cramps was used, in all cases with great apparent benefit.

"With regard to the effect of particular articles upon particular symptoms, it differed very much in different cases. The vomiting was controlled, in many, by creosote. I usually gave two drops of that article, with a little cinnamon-water, in half an ounce of thick mucilage of gum-Arabic. In other cases, where the vomiting was obstinate and long continued, it has been frequently checked (greatly to the relief of the patient) by a simple soda-powder; besides relieving the vomiting, this is extremely agreeable to the patient, and allays, better than anything else, the tormenting thirst.

"In some few cases the cramps have apparently been relieved by assafoetida; but in most cases it has done little good. But the cramps in the stomach have in many cases been quickly relieved by cups applied to the epigastrium.

"Stimulants, such as brandy, ammonia, &c., I have never seen do any good, either in preventing the collapse, or in rousing the patient while in that state. I have used them faithfully and freely, and cannot call to mind one case in which I was satisfied that any good resulted from their use.

"In regard to some points connected with the prognosis, my observations do not accord with the generally received notions. The vomiting of bile, and the reappearance of bile in the discharges from the bowels, have frequently occurred in cases which terminated fatally.

"A majority of the fatal cases have lived forty-eight hours; and but three or four have died



within twenty-four hours after the attack. The first case, which occurred on the 1st inst., died on the 7th, with symptoms of effusion into the ventricles of the brain, having relapsed after the exposure on the 3d and 4th inst.

"Since the 15th a few cases of diarrhœa have occurred, attended with cramps in the stomach and limbs."

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	6, 233		6, 560		6, 277		6, 225		6, 324			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis acuta et chronica.....	88	0	25	0	32	0	38	0	183	0	0 in 183	28
Catarrhus .....	330	0	175	0	119	0	335	0	959	0	0 in 959	151
Phthisis pulmonalis.....	6	4	6	2	3	1	10	5	25	12	1 in 2	3.9
Pleuritis .....	17	0	9	0	19	0	21	0	66	0	0 in 66	10
Pneumonia .....	33	2	14	3	3	1	19	1	69	7	1 in 10	11
All other diseases of this system	19	0	22	2	17	0	16	2	74	4	1 in 18	11.7
Total. ....	493	6	251	7	193	2	439	8	1376	23	1 in 60	217
Rheumatismus .....	208	1	189	3	152	0	183	1	732	5	1 in 146	115

SCORBUTUS.—A glance at the general abstract for this frontier will show that the troops, like those stationed on the southern, or Rio Grande frontier, have suffered from scurvy to a very great degree. Assistant Surgeon Crawford, in reporting upon this disease as it appeared at Fort Croghan in 1852, observes that "the affection of the mouth and muscles constituted its chief feature. The tendons of the vasti were exceedingly rigid; the popliteal space occupied by a hard, large tumor, of a bluish-black color. Often the thigh was black and hard, and tumors would appear in the calves of the legs." Having been disappointed in the effects of citric acid, Assistant Surgeon Crawford came to the conclusion, that as the maguëy plant had been highly spoken of, the same virtues might be found in a greater or less degree in the whole family of the *cacti*; and he was therefore induced to try the common prickly pear (*cactus opuntia*), which was abundant near the fort. The result was highly satisfactory. It was prepared "by removing the thin epidermis from the thick succulent leaves, and, after cutting them into slices, macerating them in water. This furnished a thick solution, which was given as a drink to the patients."

Assistant Surgeon Anderson writes very favorably of the nitrate of potash in the treatment of scurvy, as it affected the command at Fort Terrett.





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ABSTRACTS

OF THE

PRINCIPAL DISEASES AND DEATHS

OCCURRING AMONG THE TROOPS

IN TEXAS.

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## REPORT ON THE SICKNESS AND MORTALITY

## No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

		FIRST QUARTER.												AGGREGATE STRENGTH.	
CLASSES OF DISEASES.	YEARS .....	1849.	1850.	1851.	1852.	1853.	1854.								
	MEAN STRENGTH.....	578.	682.	917.	757.	819.	1,476.							5,179.	
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
Fevers.....	Febris continua communis.....	4	3	7	7	3	14	38							
	Febris inter. quotidiana.....	12	17	9	12	72	157	279							
	Febris intermittens tertiana.....	7	21	40	9	75	114	266							
	Febris intermittens quartana.....	2						2							
	Febris remittens.....	8	3	11	1	6	15	46	1						
	Febris typhus.....	1	1	28	2		4	33	4						
Eruptive fevers.....	Febris typhus heterodes.....														
	Varicella.....		1					1							
	Variceloid.....		1					1							
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....	60	35					60	35						
	Dysentery.....	120	2	27	2	106	2	83	53	1	118	4	567	11	
	Dysentery acuta.....	12		9		49		17	36	2	49		172	2	
	Dysentery chronica.....					7		2	2	1	2		11	3	
	Enteritis.....					1			1		2		4		
	Hepatitis acuta.....										1		1		
Diseases of the respiratory system.	Hepatitis chronica.....														
	Obstructio.....	6	4	11	7	23	37	88							
	All other diseases.....	15	2	21	33	5	15	31	123	2					
	Bronchitis, acuta et chronica.....	19		10	15	2	4	54							
	Catarrhus.....	17	42	45	26	71	111	312							
	Phthisis pulmonalis.....	1				1	1	3	3	1	6	4			
Diseases of the brain and nervous system.	Pleuritis.....	1	10	4	3	4	4	26							
	Pneumonia.....	1			1	2	1	7	3	1	14	2			
	All other diseases.....		2	1	1	1	4	9							
	Cephalalgia.....	3	11	7		2	7	30							
	Delirium tremens.....	2	3	2	3	4	2	16							
	Epilepsia.....	1		2	1		2	6							
Diseases of the urinary and genital organs.	Naralgia.....	1					7	8							
	All other diseases.....	6	3	3	1	1		10	4						
	Gonorrhoea.....	1	1	6	11	5	4	28							
	Stricture urethrae.....	1						1							
	Syphilis primitiva.....	2		2	8	3	1	16							
	Syphilis consecutiva.....	3	1	5		1	2	12							
Diseases of the serous and exhalant vessels.	All other diseases.....			3	2	4	2	11							
	Asites.....														
	All other disease.....			2				2							
Diseases of the fibrous & muscular structures.	Pernio.....														
	Polypus.....														
	Rheumatismus.....	16	1	42	52	19	1	26	56		211	2			
Abscesses and ulcers.....	Fistula.....			1				1							
	Phlegmon et abscessus.....	19	43	30	23	23	38	176							
	Ulcus.....	11	14	22	4	16	36	103							
	Amputatio.....	2	3	4	4	4	1	18							
	Amputatio.....	1					2	3							
	Confusio.....	21	39	36	21	29	1	65	214	1					
Wounds and ruptures.....	Fractura.....	5		4	2	2	4	17							
	Luxatio.....	3	1	1	1		1	7							
	Punctio.....			2				2							
	Scalpellatio.....	1	6	20	5	9	20	61							
	Vulnus incisum.....		4	1	8	3	1	18	40	1					
	Vulnus laceratum.....	7	10	1	9	5	1	45	1						
Medicamentous.....	Vulnus punctum.....		4	1	5	3	5	24	1						
	Vulnus scilapetecum.....	3	3	1	2		1	10	2						
	Debilitas.....		4		2	2	2	12							
	Elaetia.....	2	7	3	3	8	19	42							
	Hæmorrhoids.....	1	4	3		5	7	20							
	Hæma.....	2				1	1	4							
Medicamentous.....	Moderatus.....	7	2	1	1	4	4	19							
	Moderatus.....	2	8	10	5	12	18	69							
	Scorbutus.....	1	8	29	11	12	29	84							
	All other diseases.....	23	15	31	16	1	23	152	2						
Total.....		436	44	467	6	680	6	340	4	565	9	1,060	9	3,557	78



## AMONG THE TROOPS AT POSTS IN TEXAS SOUTHERN FRONTIER.

CLASSES OF DISEASES.	SECOND QUARTER.														AGGREGATE STRENGTH.	
	YEARS.....	1849.	1850.	1851.	1852.	1853.	1854.									
	MEAN STRENGTH..	389.	502.	782.	792.	648.	918.	4,031.								
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.			
Fevers .....	Febris continua communis .	1	.....	6	.....	6	.....	.....	.....	12	.....	25	.....			
	Febris inter. quotidiana ....	4	.....	11	.....	15	.....	57	.....	60	.....	156	.....			
	Febris intermittens tertiana ..	8	.....	16	.....	45	.....	32	.....	59	.....	186	.....			
	Febris intermittens quartana ..	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	16	.....			
	Febris remittens .....	14	.....	16	.....	38	.....	38	1	3	.....	19	1			
	Febris typhus .....	1	1	.....	.....	21	3	6	3	.....	.....	.....	28	7		
Eruptive fevers. ....	Febris typhus icterodes .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Erysipelas .....	.....	.....	5	.....	.....	2	.....	.....	.....	.....	7	.....			
Diseases of the organs connected with the digestive system.	Varioloid .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Cholera Asiatica .....	14	9	.....	.....	2	.....	.....	.....	.....	.....	16	9			
	Diarrhoea .....	57	3	46	2	109	1	104	1	25	.....	92	5			
	Dysentery acuta .....	13	1	5	.....	26	.....	59	1	45	.....	46	.....			
	Dysentery chronica .....	.....	.....	.....	.....	11	1	3	2	1	1	1	.....			
	Enteritis .....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	2	.....			
	Hepatitis acuta .....	4	.....	1	.....	1	1	.....	.....	2	.....	8	1			
	Hepatitis chronica .....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....			
	Obstipatio .....	7	.....	7	.....	33	.....	17	.....	14	.....	42	.....			
	All other diseases .....	21	.....	16	.....	21	1	28	.....	7	.....	27	1			
Diseases of the respiratory system.	Bronchitis, acuta et chronica ..	1	.....	5	1	8	.....	2	.....	4	.....	6	.....			
	Catarrhus .....	12	.....	23	.....	30	.....	10	.....	17	.....	12	.....			
	Phthisis pulmonalis .....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	2	.....			
	Pleuritis .....	4	.....	3	.....	6	1	.....	.....	3	.....	6	.....			
	Pneumonia .....	3	.....	.....	.....	3	.....	3	1	1	.....	1	.....			
	All other diseases .....	1	.....	1	.....	2	.....	2	.....	1	.....	7	.....			
Diseases of the brain and nervous system.	Cephalalgia .....	12	.....	12	.....	13	.....	4	.....	4	.....	5	.....			
	Delirium tremens .....	1	.....	3	.....	3	.....	6	.....	2	.....	1	.....			
	Epilepsia .....	.....	.....	3	.....	1	.....	2	.....	.....	.....	6	.....			
	Neuralgia .....	.....	.....	.....	.....	3	.....	.....	.....	1	.....	8	.....			
	All other diseases .....	5	.....	2	.....	2	.....	2	.....	.....	.....	1	.....			
Diseases of the urinary and genital organs.	Gonorrhoea .....	1	.....	6	.....	12	.....	5	.....	11	.....	8	.....			
	Stricture urethrae .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....			
	Syphilis primitiva .....	.....	.....	.....	.....	1	.....	3	.....	3	.....	1	.....			
	Syphilis consecutiva .....	.....	.....	7	.....	.....	.....	3	.....	1	.....	2	.....			
	All other diseases .....	.....	.....	.....	.....	1	.....	4	.....	2	.....	2	.....			
Diseases of the serous and exhalant vessels.	Ascites .....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....			
	All other diseases .....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	1	1			
Diseases of the fibrous & muscular structures.	Pernio .....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....			
	Podagra .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Rheumatismus .....	37	.....	27	.....	29	.....	27	.....	12	.....	25	.....			
Abscesses and ulcers....	Fistula .....	2	.....	.....	.....	1	.....	.....	.....	.....	.....	3	.....			
	Phlegmon et abscessus .....	19	.....	40	.....	31	.....	40	.....	24	.....	34	.....			
	Ulcus .....	6	.....	19	.....	11	.....	15	.....	11	.....	15	.....			
	Ambustio .....	1	.....	3	.....	6	.....	2	.....	8	.....	1	.....			
	Amputatio .....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....			
Wounds and injuries....	Concussio cerebri .....	.....	.....	.....	.....	.....	.....	3	.....	1	.....	4	.....			
	Contusio .....	12	.....	27	.....	26	.....	28	.....	29	.....	45	.....			
	Fractura .....	.....	.....	1	.....	.....	.....	2	.....	1	.....	5	.....			
	Luxatio .....	.....	.....	2	.....	.....	.....	1	.....	1	.....	4	.....			
	Sub luxatio .....	4	.....	5	.....	15	.....	10	.....	8	.....	6	.....			
	Vulnus incisum .....	1	.....	14	2	13	.....	9	.....	4	.....	13	.....			
	Vulnus laceratum .....	3	.....	4	.....	14	.....	2	.....	9	.....	6	.....			
	Vulnus punctum .....	1	.....	1	1	8	.....	3	.....	1	.....	5	1			
	Vulnus sclopeticum .....	.....	.....	1	1	1	.....	2	1	2	1	5	1			
	Debilitas .....	.....	.....	1	.....	1	.....	2	.....	2	.....	4	.....			
Miscellaneous .....	Ebrietas .....	3	.....	3	1	2	.....	10	.....	8	.....	16	.....			
	Hæmorrhoids .....	5	.....	2	.....	4	.....	5	.....	2	.....	6	.....			
	Hernia .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
	Morbentis .....	6	.....	6	.....	2	.....	5	.....	7	.....	2	.....			
	Morbi oculi .....	7	.....	8	.....	11	.....	10	.....	9	.....	16	.....			
	Scorbutus .....	4	.....	43	.....	81	.....	26	.....	19	.....	78	.....			
	All other diseases .....	14	.....	25	.....	54	.....	18	.....	17	1	30	.....			
Total .....		310	14	429	8	696	9	614	10	444	3	959	9			





## AMONG THE TROOPS AT POSTS IN TEXAS, SOUTHERN FRONTIER.

CLASSES OF DISEASES.	FOURTH QUARTER.												AGGREGATE STRENGTH.		
	YEARS .....	1849.	1850.	1851.	1852.	1853.	1854.								
	MEAN STRENGTH .....	511.	556.	560.	526.	1,352.	901.	4,806.							
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Died.	Total cases.	Total died.	
Fevers.....	Febris continua communis .....		1		4		1		1			7			
	Febris inter. quotidiana.....	9	18		34		151		265		512	1	989	1	
	Febris intermittens tertiana .....	9	27		53		141		143	1	235		695		
	Febris intermittens quartana .....	8											8		
	Febris remittens .....	15	1	71	45	30		7		54	5	222	6		
	Febris typhus.....		1	1					13	2			14	3	
Eruptive fevers .....	Febris typhus icterodes .....			1					229	50		230	50		
	Erysipelas .....														
Diseases of the organs connected with the digestive system.	Varola .....	1		1								2			
	Cholera Asiatica.....														
	Diarrhœa.....	89	3	71	1	44	36	1	181	2	114	2	535	9	
	Dysentœa acuta.....	12		12	2	21	29		167	1	38		270	3	
	Dysentœa chronica.....			3		1	1	5	1		1		9	3	
	Enteritis.....			1			1		3	1	1		6	1	
	Hepatitis acuta.....				1						1		2		
	Hepatitis chronica.....								1				1		
	Obstipatio.....	5		6		11		7		49		17		95	
	All other diseases .....	9		15		11		9		28		12	1	84	1
Diseases of the respiratory system.	Bronchitis, acuta et chronica .....	4		4		1		3	1	23	1	16		51	2
	Catarrhus .....	17		46		35		23		110		74		305	
	Phthisis pulmonalis .....					2	1	1	2	1		1	3	5	
	Pleuritis.....	2		2		3		5		3		1		16	
	Pneumonia .....		1		2		1	1	3		4	2	10	4	
Diseases of the brain and nervous system.	All other diseases.....			2		1				1		5		9	
	Cephalalgia.....	6		4		1		8		2		5		26	
	Delirium tremens .....	2		5				4		4	2	6		21	2
	Epilepsia.....	1		1		1		1		1			5		
	Neuralgia.....									4		2		6	
Diseases of the urinary and genital organs.	All other diseases .....	1		1		3	1	1				6		1	
	Gonorrhœa.....	4		3		4		3		23		1		38	
	Stricture urethrae .....			2								1		3	
	Syphilis primitiva .....	2		2		6		1		4		4		19	
Diseases of the serous and exhalant vessels.	Syphilis consecutiva .....	2				1		2					5		
	All other diseases.....	3		3				1		4			11		
	Ascites.....											1		1	
Diseases of the fibrous & muscular structures.	All other diseases.....			1		2							3		
	Perno .....														
	Podagra.....									1			1		
Abscesses and ulcers.....	Rheumatismus.....	21		23		26		20		58		23		171	
	Fistula .....	2						1					3		
	Phlegmon et abscessus.....	29	1	26		24		17		54		35		185	1
	Ulcus .....	8		23		11		10		34		7		93	
Wounds and injuries.....	Ambustio.....	1		3		3		4		3		8		22	
	Amputatio.....							1		2		2		5	
	Contusio .....	31		21		18		20		78		41		209	
	Fractura .....	2		2		4		2		2		2	1	14	1
	Luxatio .....	1		2				1		1		1		6	
	Punctio.....			1		1								2	
	Sub luxatio.....	9		9		3		6		22		9		58	
	Vulnus incisum.....	5	1	6		4		4		15		5		39	1
	Vulnus laceratum.....	3		4		5		3		8		4		27	
	Vulnus punctum.....	1	1	7		1		6		9		1		25	1
Miscellaneous .....	Vulnus sclopeticum.....	1				4	1	3		6		3	2	17	3
	Debilitas .....	4				2		1		4		19	2	30	2
	Ebrietas.....	2	1	2		4				28	1	12		48	2
	Hæmorrhœis .....	5		2		1		3		11		6		28	
	Hernia .....			1		1				2				4	
	Morbi cutis.....	12		2		2				11		3		30	
	Morbi oculi.....	1		7		4		3		18		2		35	
	Scorbutus.....	1		11	1	19		26		4	1	41	1	102	3
All other diseases.....	10		18	1	13		17	1	81		16		155	2	
Total.....		359	9	472	6	437	5	603	6	1,723	64	1,344	18	4,929	105

## REPORT ON THE SICKNESS AND MORTALITY

## No. 2.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	FIRST QUARTER.														AGGREGATE STRENGTH.	
	YEARS .....	1849.	1850.	1851.	1852.	1853.	1854.									
	MEAN STRENGTH .....	1,095.	699.	1,080.	1,248.	1,540.	571.					6,233.				
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total died.	Total cases.	
Fevers.....	Febris congestiva.....									2				2		
	Febris continua communis...	1												1		
	Febris inter. quotidiana....	23		148		45		105		76		37		434		
	Febris intermittens tertiana.	39		89		60		94		137		56		475		
	Febris intermittens quartana			4		3		1		32		3		43		
	Febris remittens.....	15	2	6		3		8		6				38	2	
Eruptive fevers.....	Febris typhus.....			2		1								3		
	Erysipelas.....			1		1		1						3		
	Varicella.....			1										1		
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....		5												5	
	Diarrhoea.....	149	6	60	1	49		114	2	57	1	10		439	10	
	Dysentery acuta.....	16		11	1	17		44	4	31		19		138	5	
	Dysentery chronica.....	30	2	4		13		2		2		7	1	58	3	
	Enteritis.....	2				8								10		
	Hepatitis acuta.....	8				2				1		1		12		
	Hepatitis chronica.....	10	1											10	1	
	Obstipatio.....	16		14		20		22		11		14		100		
	All other diseases.....	29	2	12		8		16		15		9	1	89	3	
Diseases of the respiratory system.	Bronchitis, acuta et chronica	2		15		10		7		32		22		88		
	Catarrhus.....	17		15		43		85		141		29		330		
	Phthisis pulmonalis.....			1		3	2	1	1	1	1			6	4	
	Pleuritis.....	3		2		4		1		4		3		17		
	Pneumonia.....	13		1		1		3	2	14		1		33	2	
Diseases of the brain and nervous system.	All other diseases.....	4		3		3		7		2				19		
	Cephalalgia.....	3				4		5				1		13		
	Delirium tremens.....	1		1		2	1	3		4		2		13	1	
	Epilepsia.....	2		1				1		3				7		
	Neuralgia.....	4		8		2		5		4		2		25		
Diseases of the urinary and genital organs.	All other diseases.....	2		2		1	1	2		7				14	1	
	Gonorrhoea.....	7				5		3		4		3		22		
	Stricture urethrae.....			1		3		2				1		7		
	Syphilis primitiva.....	1				1		1		1				4		
	Syphilis consecutiva.....	6				1				1		1		9		
Diseases of the serous and exhalant vessels.	All other diseases.....	4		3		3		5		5				20		
	Ascites.....	1						2	1					3	1	
Diseases of the fibrous & muscular structures.	All other diseases.....	11	3	4	1			2				1		17	5	
	Pernio.....					1								1		
	Podagra.....					1								1		
	Rheumatismus.....	45		23		35	1	43		45		17		208	1	
Abscesses and ulcers....	Fistula.....									1				1		
	Phlegmon et abscessus.....	16		29		62		31		69		17		224		
	Ulcus.....	29		23		28		38		28		9		155		
	Ambustio.....	4		4		5		5		6		2		26		
Wounds and injuries....	Concussio cerebri.....			1		3				1	1			5	1	
	Contusio.....	26		29		58		39		61		22		235		
	Fractura.....	1		5		2		4		9		2		23		
	Luxatio.....	2		1		3		1		3		3		12		
	Punctio.....	7												7		
	Sub luxatio.....	8		2		13		11		12				46		
	Vulnus incisum.....	22		22		5		17		23		8		97		
	Vulnus laceratum.....	7		4		9		11		11		2		44		
	Vulnus punctum.....	2		3		6		1				2		14		
Miscellaneous.....	Vulnus sclopeticum.....	4		7		2	1	2		3	1	1		19	2	
	Debilitas.....					2		3		4				9		
	Ebrietas.....	3	1	3		5		7		3				21	1	
	Hæmorrhoids.....	5		1		4		8		6				24		
	Hæma.....	1				1								2		
	Morbi cutis.....	4		1		2		25		9				41		
	Morbi oculi.....	10		5		7		18		27		5		72		
	Scorbutus.....	6		3		7		126	8	72		9		233	8	
All other diseases.....	22		27		63		41		52	1	10		215	1		
Total.....		643	22	602	3	640	6	973	18	1,041	5	330	3	1,229	57	



## AMONG THE TROOPS AT POSTS IN TEXAS—WESTERN FRONTIER.

CLASSES OF DISEASES.	SECOND QUARTER.														AGGREGATE STRENGTH.	
	YEARS .....	1849.		1850.		1851.		1852.		1853.		1854.				
	MEAN STRENGTH .....	959.		741.		1,061.		1,603.		1,659.		537.		6,560.		
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
Fevers .....	Febris continua communis..	10	2	11	.....	5	.....	2	.....	.....	.....	.....	.....	28	2	
	Febris inter. quotidiana .....	29	.....	64	.....	99	.....	120	.....	286	.....	82	.....	680	.....	
	Febris intermittens tertiana..	14	.....	93	.....	139	.....	197	.....	373	.....	88	.....	994	.....	
	Febris intermittens quartana	1	.....	73	.....	1	.....	3	.....	1	.....	1	.....	80	.....	
	Febris remittens .....	7	1	12	.....	11	.....	24	.....	7	.....	1	.....	62	1	
Eruptive fevers .....	Febris typhus .....	1	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	2	1	
	Erysipelas .....	2	.....	2	.....	3	.....	.....	.....	1	.....	.....	.....	8	.....	
Diseases of the organs connected with the digestive system.	Variola .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	Cholera Asiatica .....	84	35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	84	35	
	Diarrhœa .....	221	12	75	.....	150	1	124	.....	153	.....	8	.....	731	13	
	Dysentœa acuta .....	6	.....	23	1	37	.....	24	.....	35	.....	17	.....	142	1	
	Dysentœa chronica .....	2	.....	2	.....	6	.....	3	1	12	.....	1	.....	26	1	
	Enteritis .....	.....	.....	2	1	.....	.....	.....	.....	.....	.....	1	.....	3	1	
	Hepatitis acuta .....	2	.....	.....	.....	3	.....	.....	.....	.....	.....	1	.....	6	.....	
	Hepatitis chronica .....	.....	.....	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	5	.....	
	Obstipatio .....	12	.....	48	.....	65	.....	56	.....	38	.....	24	.....	243	.....	
	All other diseases .....	25	.....	21	.....	25	.....	47	.....	35	2	13	.....	166	2	
Diseases of the respiratory system.	Bronchitis, acuta et chronica	.....	.....	4	.....	.....	.....	3	.....	8	.....	1	.....	25	.....	
	Catarrhus .....	11	.....	11	.....	32	.....	71	.....	37	.....	13	.....	175	.....	
	Phthisis pulmonalis .....	1	1	1	.....	1	.....	.....	.....	3	1	.....	.....	6	2	
	Pleuritis .....	1	.....	5	.....	.....	.....	.....	.....	3	.....	.....	.....	9	.....	
	Pneumonia .....	2	.....	7	.....	.....	.....	3	2	2	.....	1	.....	14	3	
Diseases of the brain and nervous system.	All other diseases .....	9	.....	2	.....	1	.....	2	1	6	1	2	.....	22	2	
	Cephalalgia .....	1	.....	7	.....	1	.....	9	.....	7	.....	3	.....	28	.....	
	Delirium tremens .....	1	.....	1	.....	9	.....	3	.....	4	.....	.....	.....	18	.....	
	Epilepsia .....	2	.....	3	.....	.....	.....	.....	.....	2	.....	.....	.....	7	.....	
	Neuralgia .....	1	.....	6	.....	2	.....	8	.....	9	.....	.....	.....	26	.....	
Diseases of the urinary and genital organs.	All other diseases .....	2	.....	.....	.....	.....	.....	5	.....	4	.....	4	1	15	1	
	Gonorrhœa .....	4	.....	1	.....	3	.....	5	.....	2	.....	3	.....	18	.....	
	Stricture urethræ .....	.....	.....	.....	.....	5	.....	3	.....	1	.....	1	.....	10	.....	
	Syphilis primitiva .....	2	.....	.....	.....	.....	.....	1	.....	3	.....	1	.....	7	.....	
	Syphilis consecutiva .....	1	.....	2	.....	1	.....	3	.....	1	.....	1	.....	9	.....	
Diseases of the serous and exhalent vessels.	All other diseases .....	3	.....	4	.....	5	.....	5	.....	5	.....	3	.....	25	.....	
	Ascites .....	1	1	.....	.....	1	1	1	.....	.....	.....	.....	.....	3	2	
Diseases of the fibrous & muscular structures.	All other diseases .....	6	1	2	.....	1	.....	.....	.....	.....	.....	.....	.....	9	1	
	Pernio .....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	2	.....	
	Podagra .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Abscesses and ulcers....	Rheumatismus .....	20	.....	28	.....	46	3	49	.....	37	.....	9	.....	189	3	
	Fistula .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27	.....	
	Phlegmon et abscessus .....	57	.....	32	.....	60	.....	55	.....	90	.....	.....	.....	294	.....	
	Ulcus .....	17	.....	30	.....	27	.....	39	.....	36	.....	5	.....	154	.....	
	Ambustio .....	1	.....	8	.....	10	.....	6	.....	4	.....	.....	.....	29	.....	
Wounds and injuries....	Amputatio .....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	
	Concussio cerebri .....	1	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	1	
	Contusio .....	37	.....	58	.....	75	1	62	.....	91	1	34	.....	360	2	
	Fractura .....	5	.....	3	.....	1	.....	3	.....	4	.....	2	1	18	1	
	Luxatio .....	3	.....	3	.....	1	.....	4	.....	1	.....	2	.....	14	.....	
	Sub luxatio .....	2	.....	2	.....	9	.....	10	.....	15	.....	1	.....	39	.....	
	Vulnus incisum .....	8	1	25	.....	20	.....	15	.....	16	.....	5	.....	90	1	
	Vulnus laceratum .....	14	.....	4	.....	9	.....	7	.....	12	.....	8	.....	54	.....	
	Vulnus punctum .....	6	.....	2	.....	3	1	4	.....	9	.....	2	1	26	2	
	Vulnus sclopeticum .....	1	.....	3	.....	12	.....	4	1	1	.....	2	.....	23	1	
Miscellaneous.....	Debilitas .....	10	.....	.....	.....	5	.....	3	.....	3	.....	4	.....	25	.....	
	Ebrietas .....	7	.....	11	.....	2	.....	8	1	12	.....	2	.....	42	1	
	Hæmorrhœis .....	.....	.....	.....	.....	4	.....	6	.....	9	.....	.....	.....	19	.....	
	Hernia .....	2	.....	.....	.....	3	.....	3	.....	1	.....	2	.....	11	.....	
	Morbi cutis .....	5	.....	5	.....	6	.....	29	.....	10	.....	3	.....	58	.....	
	Morbi oculi .....	3	.....	10	.....	10	.....	25	.....	31	.....	5	.....	84	.....	
	Scorbutus .....	13	.....	10	2	25	1	42	3	51	.....	1	.....	142	6	
	Suicidium .....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	1	1	
	All other diseases .....	22	2	39	.....	98	.....	57	.....	87	.....	22	.....	325	2	
	Total .....		698	57	758	4	1,048	9	1,135	9	1,562	6	405	4	5,626	29

## REPORT ON THE SICKNESS AND MORTALITY

## No. 2.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	THIRD QUARTER.												AGGREGATE STRENGTH.	
	YEARS.....	1849.	1850.	1851.	1852.	1853.	1854.							
	MEAN STRENGTH . . . . .	641.	817.	1,279.	1,621.	1,319.	600.	6,277.						
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
Fevers.....	Febris continua communis .	11	20	10	68							109		
	Febris inter. quotidiana . . .	191	120	350	393	1	211		77			1,375	1	
	Febris intermittens tertiana .	74	156	291	377		315		140			1,353		
	Febris intermittens quartana .		16	11	1	1	1					29		
	Febris remittens . . . . .	77	85	45	80	1	19		8			314	1	
Eruptive fevers.....	Febris typhus . . . . .								1			1		
	Erysipelis . . . . .	2		1								3		
	Varicella . . . . .													
Diseases of the organs connected with the digestive system.	Cholera Asiatica . . . . .													
	Diarrhoea . . . . .	80	49	117	168		132		52			598	2	
	Dysentery acute . . . . .	8	40	56	78	1	16		10			208	3	
	Dysentery chronica . . . . .	2		5	2	1	4		3			16	1	
	Enteritis . . . . .		2				3	1				5	1	
	Hepatitis acuta . . . . .	1	5	1			1					8		
	Hepatitis chronica . . . . .			1	1							2		
	Obstipatio . . . . .	20	22	31	61		50		29			213		
	All other diseases . . . . .	20	1	25	21		58		11			164	1	
	Diseases of the respiratory system.	Bronchitis, acuta et chronica .	2	4	5	11		10					32	
Catarrhus . . . . .		4	17	27	30		32		9			119		
Phthisis pulmonalis . . . . .		1	1	1	1							3	1	
Pleuritis . . . . .		2	2	3	1		11					19		
Pneumonia . . . . .			2				1	1				3	1	
All other diseases . . . . .				2	5		6		4			17		
Cephalalgia . . . . .		1	6	7	10		6		4			34		
Diseases of the brain and nervous system.	Delirium tremens . . . . .	7	3	1	3		1		5			20		
	Epilepsia . . . . .		2	5	1		6		1			15		
	Neuralgia . . . . .	3	1	4	6		15		1			30		
	All other diseases . . . . .	1	2	1	3		5	2	3			22	3	
	Gonorrhoea . . . . .	3	2	7	2		1		4			19		
Diseases of the urinary and genital organs.	Stricture urethrae . . . . .			1			6					7		
	Syphilis primitiva . . . . .		1	2	3		2					8		
	Syphilis consecutiva . . . . .	2			3							5		
	All other diseases . . . . .	6	3	11	5		3		3			31		
Diseases of the serous and exhalant vessels.	Ascites . . . . .	1							1			2		
	All other diseases . . . . .	3	3	2	2		1					11		
Diseases of the fibrous & muscular structures.	Permo . . . . .													
	Podagra . . . . .													
	Rheumatismus . . . . .	17	21	14	50		37		13			152		
Abscesses and ulcers....	Phlegmon et abscessus . . . .	64	35	110	121		99		37			489		
	Ulcus . . . . .	25	17	41	52		43		29			207		
	Ambustio . . . . .	3	3	7	7		6		2			28		
	Amputatio . . . . .	1					1					2		
	Concussio cerebri . . . . .				2							2		
Wounds and injuries.....	Contusio . . . . .	29	35	63	59		102		29			317		
	Fractura . . . . .	3	4		3		6		1			17	1	
	Luxatio . . . . .	3			1		11		1			16		
	Punctio . . . . .		1									1		
	Subluxatio . . . . .		9	10	19		18		11			67		
	Vulnus incisum . . . . .	16	6	14	18		30		9			93		
	Vulnus laceratum . . . . .	4	4	7	11		9		3			38		
	Vulnus punctum . . . . .	1	5	6	8		8		3			31		
	Vulnus sclopeticium . . . . .	3	7	3	3		2		2			20		
	Deliriac . . . . .	2	5	8	8		4		4			31		
Miscellaneous.....	Eclampsia . . . . .	5	5	10	1	8	12		2			42	1	
	Hæmorrhoids . . . . .	2	2	8	13		8		6			39		
	Hæma . . . . .		2	1	1		3					7		
	Morbi cutis . . . . .	7	1	4	15		38		1			66		
	Morbi oculi . . . . .	6	4	15	35		28		5			95		
	Scorbutus . . . . .	1	2	6	13	1	15		5	2		42	3	
	Suicidium . . . . .		1	1	1	1						2	2	
	All other diseases . . . . .	28	59	91	98	1	86		29			391	2	
	Total . . . . .		742	3	837	4	1,446	4	1,892	7	1,515	4	5,888	24



AMONG THE TROOPS IN TEXAS.

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AMONG THE TROOPS AT POSTS IN TEXAS WESTERN FRONTIER.

FOURTH QUARTER.

CLASSES OF DISEASES.	FOURTH QUARTER.																AGGREGATE STRENGTH.	
	YEARS .....		1848.		1849.		1850.		1851.		1852.		1853.		1854.		Total cases.	Total died.
	MEAN STRENGTH....		398.		683.		908.		1,263.		1,634.		720.		619.			
	SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.		
Fevers .....	Febris con. communis.....				4		5		2		15		4				30	
	Febris int. quotidiana ..		5		202		34		355		419		122		127		1,264	
	Febris int. tertiana.....		11		263		113		154		454		188		77		1,260	
	Febris int. quartana.....						7		52		2		2				63	
	Febris remittens .....		3		19		15		36		20						93	
	Febris typhus.....				1				4	1			1		2		8	1
Eruptive fevers	Febris typhus icterodes ..														1		1	
	Erysipelas.....				4		1										5	
	Variola.....				1												1	
	Varioloid.....				4												4	
Digestive system.	Cholera Asiatica.....		196	133													196	133
	Diarrhoea.....		77	1	76		78		221	2	134		48		54		688	3
	Dysentery acuta.....		4		17		31	1	58	3	75	1	46		34		265	5
	Dysentery chronica.....				4		21	2	8	1	4	1	7		4		51	4
	Enteritis.....				4	1	4	1					2		1		11	5
	Hepatitis acuta.....								1		2		2				5	
Respiratory system.	Hepatitis chronica.....						1				1				1	1	3	1
	Obstipatio.....		1		12		17		32		15		16		28		121	
	All other diseases.....				27		14		20	1	19		9		10	1	99	2
	Bronchitis.....				8		4		4		9		10		3		38	
	Catarrhus.....		40		13		37		64		115		31		35		335	
	Phthisis pulmonalis.....				4	1	3	1	1	1			2	2			10	5
Brain and nervous system.	Pleuritis.....				7		7				3		3		1		21	
	Pneumonia.....				8	1	6		2		2				1		19	1
	All other diseases.....						2		2	2	10		1		1		16	2
	Cephalalgia.....		1		1		1		6		2		6		3		20	
	Delirium tremens.....		1	1	2	1	3		3		4		1				14	2
	Epilepsia.....			1		1			3		2				1		6	2
Urinary & genital organs.	Neuralgia.....				12		2		4		2		3				23	
	All other diseases.....				1				1		4		5		1		12	
	Gonorrhoea.....		8				10		4		1		2		9		34	
	Stricture urethrae.....				1		2				2						5	
	Syphilis primitiva.....		7				2		1		1						11	
	Syphilis consecutiva.....		3		3		1		3		2				1		13	
Serous and exhalant vessels.	All other diseases.....		1		3		4		4	1	1		4		2		19	1
	Asciates.....										1						1	
	All other diseases.....				2	1	1		3		3				1		10	1
	Fibrous & muscular structure.						1	1					1				2	1
	Rheumatismus.....		11		22		23		30		55		24	1	18		183	1
	Fistula.....								1		3						4	
Abscesses and ulcers.	Phlegmon et abscessus.....		6		27		40		46		68		25		30		213	
	Fleus.....		6		26		13		43		68		14		14		181	
	Ambustio.....		4		2		5		8		3		3		5		30	
	Amputatio.....						1								1		2	
	Concussio cerebri.....				1								1	1			2	1
	Contusio .....		16		28		49		60	1	79		32		35		299	1
Wounds and injuries.	Fractura.....				1				3		3				1		8	
	Luxatio.....				2		1		1		7		3		1		15	
	Sub-luxatio.....		1				7		13		20		1		12		54	
	Vulnus incisum.....				20		13		12		14		13		11		83	
	Vulnus laceratum.....		1		4		9		3		9		8		11		45	
	Vulnus punctum.....						5		4		7		3				19	
Miscellaneous.	Vulnus sclopeticum.....		1		5	2	3		5	1	2		2				18	3
	Debilitas.....		4		3		4		8		1				7		27	
	Ebrietas.....				2		4		12	1	10		2		1		31	1
	Haemorrhoea.....		6		1				9		9		2		7		34	
	Hernia.....		1										1				2	
	Morbi cutis.....				2		1		3		11				2		19	
Miscellaneous.	Morbi oculi.....		3		9		15		19		26		8		4		84	
	Scorbutus.....		2		7		1		9	1	44	1	1		7		71	2
	All other diseases.....		3		23		57		65	1	72		12		20	1	252	2
	Total.....		423	136	688	8	681	6	1,402	17	1,835	3	672	4	585	3	6,485	177





## NEW MEXICO.

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SINCE the occupation of this Territory by the forces of the United States, the troops have been kept very constantly employed, either in suppressing Indian difficulties, or in carrying on active operations against hostile tribes. The peculiar nature of the service, and the inadequacy of the force to meet the numerous demands for military aid and protection, rendered frequent changes of position necessary: and, accordingly, it is found that quarterly reports of sick have been received from twenty-four posts in this Territory, within the six years embraced in the accompanying abstract, although, on an average, not more than ten positions have been garrisoned at one time.

To the frequent movement of troops from one point to another, and the almost constant field service of a majority of the medical officers, is attributed the absence of medico-topographical reports from the military stations in New Mexico. From the few brief notes furnished with the quarterly reports, the following statements respecting the geographical positions of the several posts have been mainly compiled.

### FORT MASSACHUSETTS, CANTONMENT BURGWIN, TAOS, ABIQUITU, AND FORT UNION.

**FORT MASSACHUSETTS:** The most northern post in this Territory is located in a sheltered valley on Utah creek, opening into the great valley of San Luis. Lofty mountains rise abruptly on the east, and surround San Luis valley on all sides.

**CANTONMENT BURGWIN:** Near the source of the Rio Grande, nine miles north of Taos, in a rough, mountainous district.

**TAOS:** The town of Taos is situated on an elevated plateau north of Santa Fé, and near a tributary of the Rio Grande from the east.

**ABIQUITU:** On the Rio de Chama, a tributary of the Rio Grande from the west, in a narrow valley in the vicinity of very high mountains.

**FORT UNION:** Northeastward from Santa Fé about fifty miles, on the Moro river, a branch of the Canadian. Locality in a mountainous region opening eastward to the Great Plains.

### SANTA FÉ, LAS VEGAS, CEBOLLETA AND LAGUNA, ALBUQUERQUE, AND FORT CRAIG.

**SANTA FÉ:** On an elevated plateau, near forty miles eastward of the Rio Grande. The local exposure is very free and open, but lofty mountain ranges enclose the plateau and immediate valley of the river.

**LAS VEGAS:** The town of Las Vegas is on the first slope of those gradually increasing hills, forming an offset or dividing spur between the Raton range and the Rocky Mountains. An extensive and somewhat fertile valley, which furnishes the basis of support to the town, intervenes between the plains in front and the hills, whence a mountain-stream, the Rio Vegas, flows with a rapid current, and, by irrigation, is made to water the valley in the singularly dry seasons common to that locality. The soil is argillaceous, with so great an intermixture of mica

as to be in many places highly reflective of the rays of the sun. The natural slope of the surface, the absence of marshes, the usually dry atmosphere, and the great elevation above the sea (about 6,000 feet), combine to render the position a healthy one.—(*From quarterly report of Assistant Surgeon Thos. A. McParlin.*)

**CEBOLLETA AND LAGUNA:** At the sources of a branch of the Puerco river, west of the Rio Grande, and southwest of Santa Fé. At Cebolleta, the post was in a narrow valley or glen, facing eastward, with a very defective and local exposure. Subsequently (in October, 1851) the post was removed twenty miles southward to Laguna, an open valley of the San José river, a tributary of the Rio Puerco.

**ALBUQUERQUE:** A town on the east bank of the Rio Grande, about midway between Santa Fé and Socorro.

**FORT CRAIG:** Following the valley of the Rio Grande southward, we come successively to the military station at Socorro, and to Fort Conrad, respecting which special reports will be given. Next in order is Fort Craig, at the northern terminus of the Jornada del Muerto, nine miles below Fort Conrad and southward on the river.

#### FORT THORN, FORT WEBSTER, DOÑA ANA, FORT FILLMORE, AND FORT BLISS.

**FORT THORN:** In the valley of the Rio Grande, and opposite the centre of the Jornada, sixty miles below Fort Conrad.

**FORT WEBSTER:** At the copper mines, near the sources of the Rio Mimbres and of the Gila, Sierra Madre, in a cañon among abrupt mountains. In October, 1852, this post was removed to a point on the Rio Mimbres, eight miles E.N.E. of the copper mines.

**DOÑA ANA:** In the Rio Grande valley, about fifty miles above El Paso, and seven miles below the terminus of the Jornada del Muerto. The locality is a wide valley, with high protecting mountains at several miles' distance.

**FORT FILLMORE:** Near Mesilla, on the east side of the Rio Grande, about forty miles north of El Paso. The locality is a wide valley, with high mountains to the east, distant from ten to fifteen miles.

**FORT BLISS:** Nearly opposite the town of El Paso, on the north bank of the Rio Grande.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT CONRAD.

By Assistant Surgeon E. P. Langworthy: 1853.

Fort Conrad lies in the county of Socorro, New Mexico, 25 miles below the county seat, (Socorro,) on the Rio Grande del Norte. It is situated on a sandy, gravelly *mesa*, or table-land, which rises abruptly from the grassy bottoms of the river about half a mile west of the Rio Grande. This table-land becomes exceedingly broken as you proceed west from the stream, rising by successive rude steps or grades, till the formation is lost among the range of high mountains that bound the fort on the west, southwest, and northwest. The brokenness of the *mesa* depends in a great degree upon the washings of rains, and the drifting of the light sand that is almost constantly in motion, on account of the high winds that prevail here almost without cessation. The alluvial low lands, or bottoms of the river, consist, for the most part, of a light-yellowish sand, incorporated to a greater or less extent with a saline matter, that covers the surface of the ground in patches like snow, and presents precisely the same appearance. Where the ground is lower, the soil differs materially, and is rendered very fertile by admixture with *humus*, and other rich deposits of matter. With the exception of an occasional brackish, saline cesspool, in the flat low lands, there is never stagnant water, for any length of time, in this vicinity.

The latitude of Fort Conrad is about 33° 34' 19" N., and the longitude 107° 9' 39" W.; the altitude above the ocean 4,576 feet. Between this post and Santa Fé there is a difference of



altitude, in favor of the latter, of considerably over 2,400 feet, although there is but a little over two degrees difference in the respective latitudes of the places. While at this point we are enjoying the balmy, invigorating atmosphere of spring, so materially the climate differs, the residents of Santa Fé are wrapped up in their great-coats, and shivering over the blazing fagots of *pinon* and cedar.

This post is to a great extent environed and encompassed by mountains, remote and near, but particularly in a westerly direction. Eight or ten miles east of us, the *San Pasqual* rears its huge head; at the south, and overlooking the murky waters of the Rio Grande, stands the rugged *Fra Cristobal*, twenty miles distant; at the west and northwest looms up the extensive and lofty range known as the *Sierra San Mateo* and *Sierra Malin*. The Saline mountain, near the foot of which lies the Salt Lake, from which the Mexicans procure large quantities of common salt for domestic purposes, is seen, of a deep-blue color, in the southeast; and to the right the northern terminus of the long chain that extends across the *Jornada del Muerto*, parallel with the wagon trail, ycleped *Sierra de Caballo*—so called from the northern extremity of the range resembling somewhat a horse, as the name indicates. *Socorro mountain*, and the *Sierra de las Ladrones* (Thieves mountain) 25 and 50 miles distant (above), and on the west side of the Rio Grande; and *Manzana mountain* on the east side, opposite the Ladrones mount, and numerous others, great and small, in various directions, that are nameless, present no peculiar or very interesting feature. They are mainly basaltic, traversed by dikes of trap. These mountains are clothed more or less with timber, and stunted scrub bushes, that relieves their barrenness in a great measure to the eye of the beholder. Unfortunately, I have never been enabled to examine and thoroughly explore the mountainous districts. The physical aspect of the surrounding country is anything but interesting, and I trust I shall not incur the charge of monstrously exaggerating the true facts when I remark that the whole Territory of New Mexico is little else than a great sterile mountainous desert, not calculated for the residence of man in a state of civilization. There are *oases*, however, in nearly all deserts; and New Mexico does not prove an exception to the general rule.

This post has been established but eighteen months, and therefore its "medical statistics" must necessarily present little that would be satisfactory to an inquiring mind.

Diseases of the digestive organs have been more frequent than any other. The cause of this I am compelled to attribute, in a great measure, to the adulterated, poisonous liquor, both American and Mexican, that is vended to, and drank by, the soldiers in this Territory in great quantities; and, indeed, I may truthfully remark, that many other of the diseases of this command acknowledge, and can be traced to the same immoral source. The whole number of diseases treated in eighteen months, in a command averaging 479, was 562, as follows: 140 in the last quarter of 1851. In 1852, first quarter, 111; second quarter, 131; third quarter, 91; fourth quarter, 50. In 1853, first quarter, 39. Quarterly mean of 1852, 127. Mean of the six quarters, 93. This post is a very healthy one, and comparatively few are sick. In fact, there is no country on the face of the globe, perhaps, that surpasses New Mexico for salubrity and purity of atmosphere, and general freedom from disease. Five deaths only have occurred here, to wit: three from diarrhœa (chronic), one from empyema, and one from acute pneumonia. Six have been discharged on surgeon's certificate of ordinary disability, for injuries received, &c.

The principal maladies of the country are syphilis, gonorrhœa, rheumatism, and erysipelas. The two first-named, from the shockingly low state of morals here, are very prevalent in both sexes; and, from what I have seen of these diseases, I am of opinion that they are of a more malignant form, and less tractable under treatment, than the same in the States. Erysipelas occurs epidemically oftentimes, and is said to be very fatal in its effects. I have not seen a single case of this disease, and therefore cannot speak *ex cathedra* or advisedly concerning it. The same remedies, with slight modifications, are employed in the two first named maladies

that are elsewhere. As far as I can learn, this will equally apply to the treatment of rheumatism and erysipelas. To the simple diet of the Mexican population, much of the health they enjoy can be attributed. This diet is composed of little else than *chile colorado* (red pepper), *atoli* or *atole* (parched corn, sugar, and water), *penola*, *frijoles*, parched corn (*per se*) *tortillas*, with corn-stalk molasses and chocolate *ad libitum*. In consequence of the abject poverty of the great mass, animal food is seldom a constituent of their diet. They are *ipso facto* from necessity, *herbivorous* or *phytivorous* in a great degree. But a few weeks since, I treated two cases of bilious fever, both of which had degenerated into the typhoid stage before I was called. One, a Mexican woman, died, as might be expected under the existing circumstances; but the other, an American, whose excess in strong drink had lowered the tone of his system, I effectually cured, principally by the exhibition of large doses of sulph: quinine, as practised, and so strongly recommended by Dr. Robert Dundas, physician to the Northern Hospital, Liverpool, &c.

On account of the dryness of this climate, *koïno miasmata* is not a fruitful source of disease, as in most countries; and I have met with very few fevers the causation of which could be traced to malarious exhalations or sources. Americans, who are subject to that troublesome complaint, ague and fever, in this Territory, I am led to believe have more often brought the germs, the *blastemæ* of the malady, in their systems from the States, and some exposure here has excited into action, and developed or redeveloped the dormant occult poison.

The waters of the Territory of New Mexico are of a healthy character, generally speaking, although the waters of the *Rio Puerco*, *Rio de Galisteo*, and other small streams that debouch into the Rio Grande, are said to be deleterious to health during a high stage of water. More than 60,000 persons annually drink the water of the Rio Grande and its tributaries; and, from personal experience, I can bear testimony that it is not exceeded by the famed Missouri water for excellence and freedom from insipidity. The Rio Grande at this point wends its way nearly north and south; it is about 300 yards wide, often more, with low banks, which the "oldest inhabitant" has rarely known to be overflowed during the great rises, which annually occur in the months of April, May, and June, and which depend upon the melting of the snow in the northern mountains near the source of the stream. This flood, which is at its maximum in May, is in proportion to the amount of snow that has fallen in the mountains during the preceding winter. Like the Missouri, and western rivers generally, the Rio Grande is, at all stages of water, more or less muddy.

The "vital statistics" of the Indian tribes are little known. The chief bands that infest this section of country are the Gila Apaches, Apaches of the Sacramento and White Mountains, and Mezcalero Apaches, and the Navajoes. The Apaches are subdivided into several bands, and perhaps cannot muster, all told, over 600 warriors. The White Mountain and Sacramento Apaches inhabit the valleys and mountain fastnesses east of the Rio Grande, as well as the Mezcaleros; and the Apaches of the Rio Gila the western mountains. The Navajoes live in the country northwest from this point. This tribe is quite numerous; but its exact number is a matter that still remains *sub judice*. The Jicarrilla Apaches, living in the eastern portion of New Mexico, are not very numerous, and the governor of this Territory informed me that they had recently entered into a treaty with him to emigrate west of the Rio Grande, and Chacon's band has already gone. When Mangus Colorado, and kindred spirits of the Apache nation, have been sent to their home in the upper hunting-grounds, and not till then, will the efforts to colonize them prove at all successful. One hundred and fifty Apache warriors have been killed during the past year in the State of Sonora, in forays with the Mexicans; at least I have the authority of an officer of the army who has been stationed among the Apaches at the "Cobres" (Fort Webster) for making the statement. Nearly all the Indians in this country speak Spanish; a very few, who have been raised with the Mexicans, read, and even write it.

The nearest settlement here is San Antonita, 12 miles up the river. In 100 miles around



there are not over 10,000 Mexicans; and that may exceed the number, for I have no reliable data to direct my judgment. The Rio Abajo, from here down, for a hundred miles, is not populated at all, or the land cultivated.

The mountain Indians of New Mexico are seldom sick. The healthfulness of this branch of the *genus homo* is most enviable. Venereal diseases are sometimes found among them, and are often contracted from Mexican women, many of whom are never free from this disgusting malady, and are taken into the tribes, often willingly, more often *vi et armis*, and adopted as wives and serfs by the band, thus disseminating the seeds of the disease. These savages are subject to ophthalmia, which I judge is often the gonorrhœal variety. Gun-shot and incised wounds are more frequent among them than any other form of injury, as might be supposed from their marauding, belligerent disposition; and indeed, what illness they are subject to principally arises from this cause. Lues venerea and gonorrhœa are about all the diseases that seriously effect the Mexican populace, with the exceptions stated in a previous part of this paper. I regret I can add nothing more satisfactory on this subject.

With the geological formations and peculiarities of this country, in detail, none are familiar. The rocks "crop out" but seldom in this vicinity, and where they do are mainly basaltic, with trap and metamorphic sandstone, the latter of various colors. There are some calcareous deposits occasionally met with, and seams of porphyritic lava traverse the mountains, which are basaltic in character, and of volcanic origin. Fragments of lava, both felspathic and augitic (*scoriae*), strew the earth in the neighborhood of the mountains, as well as the debris of basaltic, amygdaloid, and trap rock, which is everywhere found on the table-lands of the Territory. Gold, mercury, copper, silver, and galena, are found in greater or less quantities in many of the mountainous elevations; and I have no doubt a little Yankee enterprise in this region would develop something important. Extensive beds of copper are known to exist at the Mimbres Mountains (the location of Fort Webster), and were formerly worked; but owing to the depredations of the Indians, active operations were abandoned. The surface of the elevation, where shafts were sunk, is covered with bi-sulphuret of iron (iron pyrites), and sub-oxide of copper (red oxide). The silver mines of the Sierras de los Organos, near Fort Fillmore, are at the present writing being worked, and yield a fair amount of the metal. The silver is found in the form of a sulphuret (vitreous silver of mineralogists), united with galena. Granitic formations are common in the country.

New Mexico can boast of nothing on a *very* extensive scale; unless it be, indeed, its sterility and actual worthlessness; and the number, variety, and voraciousness of the "*insectæ*"—a great portion of which, I presume, have never been described. The larger animals of this Territory live in the mountains and intermediate valleys and cañons.

Of the class *carnaria*, or butchering animals, are the grizzly and black bear, panther, wild cat, pole-cat, weasel, and the large and small wolf, the lobo and coyote. The two former animals seldom stray far from their natural *habitat*—the rugged mountain fastnesses. They are very large and fearfully voracious.

Of the *rodentia*, I am cognizant of only the prairie dog, a small burrowing squirrel, the mouse, rat, a large hare (known as the *burro* or jackass rabbit), and the ordinary rabbit (*lepus cuniculus*). The two latter are found in great numbers all over the country.

Of the *stilted* or *long-legged* birds, I have seen but the sand-hill crane. They are here esteemed as one of the luxuries of the *mesa*.

*Palmipedes*.—All the streams and ponds in the country are usually frequented by geese, brant, and ducks of many varieties. The *avocet*, classed under this head, is also found here occasionally.

*Accipitres*.—The turkey-buzzard, eagle, hawk, and raven, are all the birds of prey the country affords, as I am informed, and believe. The former and latter are very numerous, especially the last named, and are invaluable as scavengers around the post.

*Chelonias*.—Several varieties of tortoise—small and insignificant.

*Ophidia*.—Rattle-snakes—many huge and fearfully venomous. There are other serpents inhabiting land and water that are harmless.

*Sauria*.—Chameleon, and a small swift lizard, the speed of which on the hot sand in mid-summer would put to blush the fastest locomotive.

*Passerina*.—Sparrows, meadow-lark, blackbird (two species), martin, chapparal-swallow, and, I have lately observed, the red-breast robin.

*Gallinacea*.—The bluish, led-colored quail, or partridge, (*ortix squamosa*,) inhabits this country. I think the pisano or chapparal-cock, which I have often met with here in my rambles, also comes under the head of gallinacea.

*Batrachea*.—Ordinary toad, and amphibious frog. I have seen no horned frogs in the valley of the Rio Grande. They are common on the plains, particularly near the Cimarone river.

*Pisces*.—The buffalo fish and cat, of gigantic dimensions, are the only fish I have seen. In the mountain streams trout are found.

The mountains and wooded valleys of the streams are inhabited to a considerable extent by wild turkeys and the brilliant-plumaged *parroquet*. Antelope, and the common and black-tail deer, are comparatively plentiful in the mountainous parts of the country, where they almost exclusively roam. They are killed principally for their skins, from which garments are manufactured by the Indians and Mexicans.

The site of Fort Conrad (Valverde) has long been famous among the Mexicans for its venomous animals. Here, as elsewhere in Mexico, the centipede, tarantula, scorpion, *et id omne genus*, live and flourish. It is not uncommon to meet the two first filing athwart the parade, or crawling on the *jerga* around our quarters. I was surprised when I saw the length and acuteness of the tarantula's teeth; they are uncovered, and fold under the anterior portion of his body. I have seen, as yet, no one of the command bitten. Each leg of the centipede is armed, and terminated by an acute point, horny in character, which penetrates and poisons the flesh when they crawl on an animal.

The *vegetable kingdom* in this, as in most parts of the country, is uninteresting in kind, nor is it extensive in variety. Everything in the vegetable world is stunted and deformed—the result of the want of water. I will proceed to present all the information on this subject that I am in possession of.

The Rio Grande is skirted on both sides by cottonwood (*populus canadensis*), generally growing sparsely, very crooked, and dwarfish. There appears to be two varieties, that differ only in the color of the blossom—one being white, the other red. In the bottom land, we find the willow struggling for existence; and in the land lower still, especially where there is standing water, the reed-grass or cane. The grass in the bottoms springs up in patches or clumps, and does not grow very luxuriantly. Immediately here, and in the adjacent region, are found the obione canescens, franseria acanthocarpa, yerba del sapa, of the Mexicans; scrub white cedar; a kind of wild potato, or solanum; but not, I think, the original solanum tuberosum; wild salvia, salicornia, atriplex, iodeodonda (*larrea Mexicana*); a species of acacia; salt grass (*Uniola distichophylla*), cacti of considerable variety, in shape, size, and kind; tessaria borealis, diotis lanata, dalea formosa, and varieties of mesquite. An evergreen of the genus quercus has been spoken of by some adventurer, and also a new kind of ash and black-walnut; the three latter I have not seen. The summer and winter grama grass furnishes grazing for the herds during the respective seasons, and both varieties are pronounced remarkably nutritious. Among the sand-hills may be seen the prosopis glandulosa, riddellia tagetina, pagapaga, and chamisa. Several species of the genus pinus, cedar, and oak cover the mountains, interspersed by black-walnut, and a few other varieties of trees. These trees are not tall or large, as a general thing, and make indifferent lumber in consequence; but a virtue is made of necessity in all things in this desolate *pais*. Wild timothy, oats, clover, and a plant much resembling wheat, have recently been seen in the mountain cañons and valleys.

Rain seldom falls in this country in any quantities compared with rain in the States. The year



1852 was an extraordinary one for showers in New Mexico, and perhaps more rain fell during the last year than the two previous seasons. The whole amount of water that has fallen since the establishment of this post (18 months) is only 9.86 inches! 8.62 inches of this amount fell in 1852; the monthly mean of the same year was a little over 0.71 inches; the mean of the six quarters above mentioned, 1.64 inch. The prevailing winds are from the W., S.W., and N.W., and the atmosphere is seldom in a state of quietude. In consequence of the absence of rain here, artificial irrigation has to be resorted to by means of *acequias*, factitious canals, or ducts running from the river to the cultivated ground. The *acequia* is taken out of the river high enough to give the water sufficient elevation to overflow and inundate the land at the pleasure of the *ranchero* who cultivates the soil. Rain is not at all depended upon. Very little dew falls here; the atmosphere is exceedingly dry. Occasionally, during the winter months, a slight fall of snow occurs; but this is rare, and what falls immediately disappears.

I have now stated all facts that I am in possession of relating to this post and the adjacent country that could be of interest to the medical department of the army. This post has had existence so brief a period, that the sickness and mortality that has occurred here furnishes no field for speculation or the deduction of important facts. I have to express my sincere regret that the report is not more elaborate, more instructive, and more comprehensive; but circumstances, over which I have no control, effectually preclude the possibility of its being so at present.

#### MEDICAL TOPOGRAPHY AND DISEASES OF SOCORRO.

By Assistant Surgeon J. F. Hammond: 1852.

The surface of New Mexico is formed into a succession of mountain ridges and narrow valleys running from the N.W. by N.—the result of volcanic action; as the quantities of granite, porphyry, and trachyte upon the loftiest summits evince, it has been scathed to barrenness, its streams dried up, generally, the soil scorched to powder by volcanic fires. The craters of extinct volcanoes, and beds of scoriæ, are observed in places, and basalt almost everywhere. The whole yields a sparse growth of stunted cedars and artemesia, and, on some of the mountain ridges, the short-leaf pine, walnut, and small trees of white oak; and a few groves of cottonwood are in the valleys here and there.

Running down one of the valleys, distinguishable from the others only by its watercourse, its scattered thin groves of cottonwood, and the greater number of inhabitants, is the Rio Grande del Norte, skirted, a few hundred yards from its banks, by a range of naked, yellow pebbly hills, relieved by a succession of ranges beyond, which increase in height as they rise successively, until the view is bounded by a bare ridge of low, dark, rugged mountains. On the west side of this river, in latitude about  $35^{\circ} 41' N.$ , longitude  $106^{\circ} 2' W.$ \* from Greenwich, and in altitude 6,846 feet above the level of the sea, is the village of Socorro.

In the revolution by the Pueblo Indians, in 1680—excited by the cupidity and tyranny of the priests, that even to the present day have kept the inhabitants in slavery and the most blind ignorance and corruption—which expelled the Spaniards from New Mexico, the latter, under Otermin, the governor, in their retreat to Mexico, had reached this point in a state of starvation and despair, when they were relieved by a supply of provisions sent them by the lieutenant governor, who was in advance of them. On the return of the Spaniards to New Mexico, ten years afterwards, the agricultural and other advantages of the location induced them to make a settlement at this place, and in grateful remembrance of the succor they had met here, they named the settlement Socorro.

Socorro is situated in a recess of the hills and mountains, which apparently form a grand amphitheatre here on its north, west, and south sides. On the N.N.W. a chain of mountains has been pierced by the river, and its south wing, rising into scattered and gloomy peaks, descends southwardly in two broken ridges, the nearest of which, about four miles off, rises, in

\* Position and altitude is given as recently determined by Major Emory.—C.

a rugged cone, to the altitude of 2,800 feet, directly west of the village; whilst the farther, twelve miles distant, with a regular pyramid, apparently of smooth stone, upon its back, reaches the height of 4,500 feet, or more, above the plain, and is partially covered with snow from November until June. They run toward the south, and are in view for twenty miles below, when they are hid behind an angle of the chain. Between them is a smooth, pretty valley, opening at each extremity on the river, and covered with short grass which gives sustenance to herds of antelope. Four miles off, on the north, a range of barren gravel-hills spring suddenly, in a bluff, from the river, and, sweeping around westward and toward the south, and spreading out into small flat spurs toward the east, terminates laterally in that direction by an abrupt fall of fifteen feet or more, and forms the first extent of inclined plateaux, reaching from the base of the mountains to the river, eastward. On the west side of the range, it is continuous with the mountains. From the foot of this first plateau extends a second inclined plain, which, at the distance of a mile, toward the east, from its commencement, experiences a less marked fall than the first; and, stretching onward for a mile toward the east, falls into the Rio Grande. Beyond—east of the river—parallel with, and five hundred yards from it, is a range of sand-hills, rising, as they retire toward the east, gradually into a low range of mountains, fifteen miles distant, and send a spur to form a high sand-bluff on the river, opposite to the village. This latter lies directly across the road from the lower country, and, irregular on the top, obtains the name of “The High Hills of La Parida.” This range of mountains, running toward the south, for many miles in view, is overtopped, here and there, in the southeast, by distant, rugged, sombre mountains; and on the north is covered from view by the gravel-hills spoken of as rising west of the river. The river, flowing from the north, makes a large bend eastward, six miles above the village, in the concavity of which is a heavy grove of cottonwood, in view from Socorro, overshadowing a flat damp bottom. Changing its direction to the west, it suddenly turns to the east, leaving the convexity at the foot of the bluff of the gravel hills, and, winding on westward for some distance, it turns to the south, and laves, four miles below, the base of “the sand-hills of Parida;” flowing on, it is lost to view amid the low bluffs of the first plateau, which stretch out to meet it, two miles below the village. Along the last concavity, is another grove of cottonwood, nearer than the other to the village, upon a dry, sandy soil; and on the east side of the river, above and below “the hills of Parida,” are extensive and beautiful groves of the same, covering a low, damp surface. The valley of the river is well marked in the distance toward both the north and the south. From the foot of the mountains, on the west, to the river, is a distance of three miles; and the slope, extending between those two points, is formed into three plateaux, of about equal breadth, and of different elevations—dipping toward the river. The upper one has been described. It takes the name of plain, only in a very general sense. Between its spurs of flattened hills, with precipitous sides, are small flat-bottomed valleys, of the same extent. All is covered with grama grass—the *chondrosium fœneum*—a sparse growth of stunted cedar, the *jedconda*, the cactus, and yucca; and it is the general pasture for the cattle of Socorro and its neighborhood, from the month of June until March. It seems to be formed of drift, from the mountains; and its extension to have been limited by the river, which, in earlier ages of the world, when, perhaps, in greater volume, must have rolled its waves at the base of it. The second, is a more regular and inclined plain. Formed, by deposition from the river, and afterwards by detritus from the mountains, it consists of a dry, gravelly loam, and yields, in addition to the grass—of which there is very little—a heavy growth of *artemisia*. Its upper edge is skirted by grist-mills; and upon its lower third and the upper fourth of the plain below, is found the arable land. Upon its lower third stands the village of Socorro. The third plateau is of alluvium, more recently from the river, contains a large proportion of sand, and yields a rank growth of succulent grass. Its surface, in greater part, furrowed with sluggish *acequias*, and pools of stagnant water, is so marshy, during a very wet season, as not to support the weight of a loaded wagon. It contains a large amount of chloride of sodium



and nitrate of potassa, and salts of magnesium and calcium, all of which, mechanically mixed, encrust the surface at dry spots, so that they may be collected with a spoon. The mountain nearest on the west, is a rough-brown mass of basalt and trap-rock, with which is mingled granite, porphyry, red sandstone, carboniferous limestone, and selenite; and it is said that copper ore, and auriferous quartz-rock are found in it. A few stunted cedars grow upon it where soil obtains; and green grass, seeded, and most luxuriant, may be seen on its east side two-thirds of the way up to its summit, as early as the month of March. Along its base, on the east side, are springs of warm and cold water, which, collected into acequias, traverse the first plateau, turn the grist-mills at the summit of the second, furnish water for all domestic purposes in the village, irrigate the fields and vineyards, and, finally, are discharged upon the third plateau, which, more nearly level than the others, too damp to cultivate, spreads out a beautiful meadow, now throwing off its summer tinge, clear to the river's edge. As it now is, dotted over with flocks of sheep, goats, cattle, horses, shepherd boys, and clumps of trees, the river glimmering here and there, through the autumn foliage, and all bathed in a rich light of the setting sun, the scene is picturesque indeed.

The village of Socorro is formed by a congeries of plazas, of which, no less than six may be counted, illy defined, but bounded on some of their sides by mud hovels, containing each a parcel of squallid wretches who do not "dare to be poor," as inhabitants, and who number, in the aggregate, about five hundred persons. An irregular lane runs in one part of the place, and it is pointed to as a street, but without a name; and fronting toward this space, and about in various directions are some stores. The only prominent object seen at a little distance—beyond a little distance nothing is to be seen—is the adobe church, with its two turrets and belfry, which reminds one forcibly of a large-sized Mississippi steamboat, though not so variegated.

Close around the village, in every direction, are vineyards, and beyond them are fields of wheat and Indian corn, and orchards of peach. The houses are built of *adobe* (sun-baked bricks of mud and straw, 16 inches long, 8 inches wide, and 3 inches thick), and, among the better classes, consist of several rooms built on the four sides of a small square, the *patio*. The doors open on the interior of the square, to which there is access from without by a broad entrance with folding doors, called the *saguan*. The thickness of the walls is the length of one, sometimes two, adobes. Plastered externally and within with mud laid on and made smooth by the hands; interiorly they are dazzlingly white, made so by a whitewash of gypsum, which is burned in earthen ovens, and ground to powder by the women, on the *metate*. The latter is renewed every two or three months, and renders sweet the atmosphere, prevents the breeding of vermin, and gives an air of comfort that would not be even guessed at by one without. The houses have never more than one story, which is rarely more than ten feet high. The rooms are small, generally. The doors are very small, and the windows are scarcely more than pigeon-holes, sealed with thin transparent laminae of selenite, retained by a cement of lime and sand. The fire-place and chimney are usually in a corner of the room, and exceedingly small; the billets of wood are burned with one end resting on its floor and the other up the chimney. The fire-place and chimney are both projected into the apartment, and thus give nearly all the heat to the interior. The floors are invariably of mud, and are repaired every month or two by a fresh layer laid on smoothly with the hand. The houses of the common people are without the *patio*, and spring up without reference to order or plan. All are exceedingly comfortable in winter and in summer, when they have been so changed as to admit more air and light.

The altitude of the spot, its remoteness from any large body of water, the numerous ranges of mountains on either hand for hundreds of miles, the universal absence of forests, and a rapid river coursing down the valley, render the atmosphere rare, lower its temperature, and disturb it much with winds. The last are cold and piercing in the winter season, and are generally from a point north of east and west, most frequently from the northwest.

The last frost in the spring of 1850 was on the 5th of May, at which time the grape crop was destroyed; the peach blossoms had been killed the 23d of March: it was unusually late. The

first white frost in the fall of the same year was the 19th of October. The last the succeeding spring, was the 8th of April. The first house-swallow made its appearance the 3d of April, in 1850 and 1851. The mean temperature of that day was  $58^{\circ}$  in 1850,  $39^{\circ}$  in 1851. The hibernating animals begin to show themselves the first of April. They sow wheat the middle of January. Disembank the grape-vines the first of March, and prune and irrigate them the middle of the month. Plant corn early in April; reap wheat the middle of August; gather corn the first of October, and embank the grape-vines early in November.

The total amount of precipitation in rain and snow from 1st December, 1849, to 31st August, 1851, twenty-one months, was 10.97 inches.

During the series of twenty-one months through which meteorological observations were made, there is but one day registered in which the sun was not visible. The character of the clouds during the winter season were stratus and cumulostratus; in spring, stratus and cirrus; in summer, stratus, cirrostratus, and cumulus; during the fall, circumstances prevented the registry of them. There was an occasional arrangement of the clouds that seemed unusual to the observer—viz: cumulostratus clouds were arranged in bands or belts, which began in the S.W. by S. point of the horizon, and diverging until they reached the zenith, then converged to a point at the horizon N.E. by N. The long diameter of the cumuli, like pillows, which composed the band, was in a direction at right angles to that of the band, pointing to the N.W. by N. and S.E. by S. Allowance is not made for the declination of the needle. The effect of electro-magnetic influence, its direction must have depended upon some local cause, since the length of its constituent parts was in about the direction of the magnetic meridian of the earth. The view is so little obstructed at Socorro, that clouds at a great altitude may be seen, when the day is clear, two hundred miles off on either hand. And these belts appeared to extend through that great distance. They were observed on four occasions, different days, in December, 1850; twice in January, 1851, three times in February, once in April, three times in May, and once in June; and as often, perhaps, during the early part of the year 1850, but they were not registered.

Light from the sun, when setting, is often observed, in a clear evening, to pass in broad rays from the horizon towards the sun, diverge, similarly to the clouds spoken of, over the whole sky to the longest meridian, then converge to a point of the horizon opposite to the sunset. The electrical tension of the atmosphere is very great at times, especially after a fall of rain or of snow, and which has melted rapidly. The dry state of the atmosphere, and the large quantity of salines which the ground contains, surcharge the atmosphere, on such occasions, with positive electricity, which is sometimes strikingly exhibited. On the morning of the 29th of December, 1849, snow fell to the depth of two or three inches. It melted rapidly, in a few hours, and was followed immediately by vivid zigzag lightning and loud thunder. There was no rain. The day began and ended with an earthquake—there was a shock at 6 A. M., and one at 8 P. M.

Shocks of earthquakes were frequent during the early part of these observations; and the mountain nearest on the west, from which emanates a spring of warm water, was evidently, at times, under the influence of subterraneous heat. On the 11th of December, 1849, there was one shock; on the 28th, five shocks; on the 29th, two; and on the 30th, one. On the 1st of January, 1850, there was one shock; on the 2d, two; on the 4th, three; on the 5th, two; on the 6th, two; one on the 10th; and one on the 12th. The 8th of February there was one shock; two on the 10th of August; one on the 2d of October; one on the 18th, and one on the 23d of January, 1851; and one the 13th, and one the 14th of February. In all, twenty-eight shocks during fifteen successive months. Most of them were severe shocks, as they would have damaged a house of three stories, the usual height in the United States. They were accompanied, generally, by a rumbling noise. Those that occurred in December were not felt fifteen miles south of Socorro; and those on the 1st and 2d of January were not felt ten miles to the west, in the valley between the two ranges of mountains. Nothing could be ascertained relative to the



extent of the others. The 30th of December, 1849, snow fell at Socorro to the depth of two or three inches, yet the day was a bright one at a little village seven miles above, and to the N. N.E. On the nearest ridge of mountains towards the west, for a mile or two above and below the warm spring, and including the high cone, the snow was entirely melted during the day, whilst it remained for several days on other parts of the same ridge of more than two thousand feet less altitude. After every snow the surface mentioned was observed to be bare sooner than elsewhere. At various points from the mountain to the river, the ground gives to passing wheels of vehicles a resonant sound, as if from a cavern beneath. Earthquakes are said, by some of the inhabitants, to be very rare here, and by others, to be of frequent occurrence. It is difficult to arrive at truth relative to such matters from such hyperbolic people.

The Rio Grande is an accumulation of mountain torrents. Its depth and width are variable. From the first of May to the latter part of July, the volume of water is greatly increased from the melting of the snow on the mountains farther north. Its breadth then is two hundred to six hundred yards; it is four to six feet deeper at Socorro, and its current sweeps along with a force that undermines and destroys hundreds of acres of cultivated land in a single season, and forms extensive deposits with incredible rapidity. Nothing withstands its impetuosity. Upon whatever point its current may be directed—it changes its channel, on an average, once per annum—there compact clay-banks or lofty gravel-hills crumble into it like sugar. The village of La Parida has been gradually moved a thousand yards east of where it originally stood sixteen years ago. In 1850, its vineyards, orchards, corn and wheat fields, and acequias were falling into the stream. In 1851 the washings by the rains, from the banks and even the plaza of the village, and the little increase of the river saved the village that year. Ordinarily it is about eighty yards wide, and fords for horses and vehicles are found every few miles. The water is at all times more or less turbid, but much more so during the season of the flood. That used for irrigation makes a heavy deposit, which improves the land. Besides the substances mechanically suspended in it, it contains, in solution, salts of calcium, sodium, potassium, and magnesium, and is, at times, strongly impregnated with sulphuretted hydrogen gas. The last was observed from the 15th to the 25th of July, 1850; on the 29th of October, on the 17th of April, 1851, and from the 23d of April to the 2d of May; and, on the 25th of April, with salines.

The New Mexican is, almost invariably, a mestizo. He does not possess the perpendicular square forehead of the same class in the valley of Mexico; but has the low, retreating front, high cheek-bones, and oblique eyes of the surrounding Indian tribes. His shoulders are square, and of less than the average breadth; the chest prominent; his limbs spindling, and stature below the medium height; his temperament nervous, and appearance thin and dejected. Like Achimœnides:

"Somewhat between a mortal and a sprite;  
So thin, so ghastly, meager, and so wan,  
So bare of flesh, he scarce resembles man."

An exception to this is found in the peon, who is muscular; developed like all physically laboring men. His mind is without a spark of culture, except to pander to the cupidity of the priests; without knowledge, beyond the experience of the narrowest sphere of domestic life, he evinces the painful combination of astuteness with impotency. The forbidding character of his country, beyond the valley, prevents his wandering from home; whilst his inherited vanity and pride and stubbornness, prevent impressions from the few foreign objects that are brought before him. There are no books among the people; scarcely any at all are taught to read, and fewer still are taught to write. They indulge, to the fullest extent, the animal propensities of their less than semicivilized condition. "The fatal bait of temporary ease and quiet," seems suspended before the imaginations of all; "and to this it may be, in some degree imputed, that they have found their inordinate indolence exchanged for slavery." Yet, they are more active,

more industrious, more nearly independent, have more forethought, are braver, and are more capable of providing for and protecting themselves, than are the inhabitants of lower Mexico.

The females are, generally, homely; yet, at times, strikingly beautiful. They are better developed, physically and mentally, than the males. They are *never* educated, rarely taught to read, and very rarely taught to write. Secluded from the (at least outward) display of contending passions, they cultivate in quietness the kindest emotions of the heart. They are cheerful; have a strong idea of beauty; a consuming emotion of love, but it is not constant; of sympathy, which never grows less; of pride, humility, gratitude, remorse, a vivid sense of the ludicrous; but of sexual virtue their moral education destroys every idea suggested to them by nature:

"Prima hominis facies, et pulchro pectore virgo  
Pube tenus," etc.

The business of their lives is constituted by their domestic duties, and the rigid espionage under which they live, and the want of consciousness of doing wrong, impel them with the highest zest to intrigue.

They marry as early as eleven, and generally between that age and fourteen. The males as early as their sixteenth year of age.

They are a pastoral and agricultural people. Their country without timber, they do not make fences, but trust their cattle to herders; their sky almost without rain-clouds, they irrigate their lands by canals from the river, which last for generations. Thus their labor is confined to the mere tilling the ground. They plant barely sufficient to subsist themselves, in order to gain more time for idleness. The productions are maize, wheat; a species of bean, rich in gluten; red-pepper; a species of mammoth squash; a few onions; a small quantity of garlic; the garden pea, sown broadcast; a few tomatoes, in some sections; grapes, of which there are two varieties—the black, and muscatel or white of which they make an inferior wine and brandy; peaches, water melons, cantelopes, and a small quantity of weak, inferior tobacco. In some sections of the country are found apricots, inferior apples, pears, quinces, and figs. Upon these they subsist themselves most sparingly. The onions, garlic, and squashes, are consumed before the middle of the winter is past; the peas, tomatoes, and fruit generally, by the time they are matured; and maize, wheat, beans, pepper, wine, brandy, and tobacco, scarcely reach the succeeding crop. With these edibles, they mingle the sun-dried, unsalted flesh of the ox, sheep, and goat, and the fat of them in large proportion. The milk of the cow, sheep, and goat, mixed together or not, are freely used; and cheese is precipitated from each by the stomach of the calf or sheep.

In consequence of the altitude of the country, probably; of the impure atmosphere in their illy-ventilated habitations; of their inefficient clothing; want of cleanliness; want of exercise; scant and little varied diet; early marriages and an inherited cachexia, they are born with feeble constitutions; cut the first incisor teeth at the end of the first year of age; walk at two years; are weaned at three years, or when the mother becomes obviously enciente; the females menstruate at twelve and thirteen; the milk canines are seen standing, and the permanent molares appearing at the seventeenth year; at twenty-five they are in the "sere and yellow leaf;" liable to be, and suffering much when they are, attacked by disease, they pass through life with lessened vitality, and rarely attain to very old age. Nature has done a great deal for them. Were they civilized and intelligent, disease would be little known among them.

The diseases which prevail in this vicinity are syphilis, scrofula, gonorrhœa, diarrhœa, dysentery, rheumatism, intermittent fever, pleurisy, pneumonia, and rarely typhoid fever. Small-pox, measles, scarlatina, erysipelas, and whooping-cough, have made their visitations. The first has left its mark on nearly every face. The people cannot tell when it was among them. Few have been vaccinated, and a few inoculated. The first four, of the last group, were attended with little fatality; but the whooping-cough was very destructive of children. Erysipelas attacked a few during the fall and winter of 1850, and, though the whole face and scalp were involved, medical aid was rarely called for, and nearly all recovered.



Syphilis—the tertiary, secondary, and primary forms—are very generally met with. The writer has met with two cases in which he thinks he has reason to believe that secondary syphilis was communicated by sexual intercourse.

Gonorrhœa is very frequent, and very general.

Diarrhœa and dysentery occasionally seen, and nearly always traceable to imprudence in diet.

Acute rheumatism, of greater or less violence, is frequent, especially in the months of March, April, and May, among strangers; very rarely seen among the natives. The former are more liable to it from want of acclimation, and negligence in protecting themselves on going from the close warm rooms, into the cold air constantly in motion without. An unusual amount of *materies morbi*, from checked secretions, and an overplus of vitality, after a march across the plains, quickly succeeded by sedentary life, must predispose to the attack.

Chronic rheumatism is almost unknown.

Intermittent fever is very rare; is usually of the tertian type, and yields readily to sulphate of quinine.

Pleurisy and pneumonia are still more rarely, and typhoid fever scarcely ever seen. Typhus never.

Diseases of the skin are unknown, except some slight syphilitic eruptions.

Phthisis pulmonalis I have never seen in the country, except in two instances. Once in an officer of the United States army, and once in an American emigrant. It was developed in each before he left the United States, and each very gradually improved. One resided at Socorro, the other at El Paso del Norte.

Their materia medica comprises but few articles. Baths in the warm spring are regarded by them as specific for all diseases which enable the sick to reach it; especially in syphilis (in all its stages), gonorrhœa, and rheumatism. The spring rises at the base of the nearest mountains on the west, in a bold stream which flows from under a large mass of volcanic conglomerate, and is about three miles distant from the village. The water is limpid; and at the spring, its temperature is 92° Fahrenheit the middle of December, and a little less the middle of March. It contains in solution, nitrate of potassa and chloride of sodium, and is strongly impregnated with sulphuretted hydrogen gas. The last is in variable quantity. The water, when used to drink, produces in those unaccustomed to its use, obstinate constipation and vomiting, and changes the color of the stools to a darker hue. The quantity of water that issues is very perceptibly less during the summer; due, probably, to the dryness of the season, and the absence of snow on the mountains above. The *popilote* (*ephedra occidentalis*) is used in gonorrhœa. It, and local baths, with water from the warm spring, are the only remedies resorted to in that disease. The taste is terbinthinate and astringent, and is agreeable. It is a stimulant diuretic, and does not constipate the bowels. It is prepared for use by macerating two ounces of the branches, cut into small pieces, in a pint of hot water, in a close vessel, for three hours, and then straining. A pint of the infusion may be drank during the day. It acts with surprising promptness, and is an efficient and valuable medicine. The shrub is an evergreen, and grows in great profusion throughout the country. The practice of the art is entirely in the hands of the women, who employ, in addition to the above, incantations and ecclesiastical rites, pictures, and carved and moulded images of saints are placed around the patient and invoked. The most potent of all is the “Niña de Atocha.” She is worn around the necks of the whole population. The character of a physician is entirely unknown to them.

None of the cryptogamic plants have been observed here, except a few species of mould upon barley, bread, pastry, and pickles; and very rarely at all.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT DEFIANCE

By Assistant Surgeon W. J. H. White: 1853.

This post, approximating latitude 35° 44' north and longitude 109° 15' 30" west, is situated in a narrow cañada of light argillaceous soil, which is covered with a moderate growth of short

grass, chiefly *sesleria dactyloides*, and in a few places is well adapted to garden cultivation. Cañoncito honito, about four hundred yards from the quarters, opens into this on the west, its sandstone walls being from three hundred to four hundred feet high, length one mile and a quarter, and average width seventy yards. A small stream of good water flows along in the bottom, which is composed of a boggy soil that yields a rank growth of vegetation.

The barracks are built upon a square of level ground, destitute of trees, fronting a parade of about one acre and a half, and constructed of hewn pine logs placed one above the other, with the interstices chinked in with mud; the roofs and the floors are of dirt; and the means of ventilation scanty.

A view of the surrounding country presents a succession of lofty mountains and extensive valleys. The former consist mainly of sandstone without organic remains, and are interspersed with a sparse growth of tall pine, *pinus edulis*, an undergrowth of scrub-oak, scrub-cedar, *fal-lugia paradoxa*, several varieties of cacti, and the *yucca augustifolia*. In the latter a carpeting of grass is variegated during the summer with many species of plants, as the *rosa parviflora*, *helianthus annuus*, *chenopodium album*, red, and white geranium, aster, gentianæ, *Artemesia*, *cœnothera biennis*, *humulus lupulus*, *portulacca oleracea*, *sida abutilon*, and a species of *solanum* or potato.

The animals are the black-tailed deer, *diceranocerus furcifer*, *canis nubilus*, *arctomys ludoviciana*, panther, rabbit, and squirrels. The reptiles include various species of the *lacerta* and *crotallus*. Only a few common species of birds show themselves, as the *corvus corax*, *ectopistes carolinensis*, *quiscalus versicolor*, *turdus migratorius*, *charadrius vociferus*, *picus auratus*, *vespertilo murinus*, the turkey, the wren, and the swallow. In pools near by is found a peculiar animal of the batrachian order, supposed to be the *siredon*.

The climate is cold and dry; and although the thermometrical observations do not show a very low mean of temperature generally, yet the transitions from heat to cold are often sudden; hence, the effect produced upon the system is felt more keenly than in a climate where the mean temperature may be equal, but the transitions gradual. At this season such changes are more frequently connected with southwest winds. A local cause, contributing in no small degree to lower the temperature here, may be found in the cañoncito so close by. From an experiment late in the fall I noticed that at near the same hours of observation, wind north and east, the thermometer was constantly, on an average, from 10° to 12° lower in this cañoncito than at my quarters. Now, from the conformation and direction of its walls, a wind from the westward, or any intermediate point south, coming in contact and passing through this defile is reflected directly upon the garrison; so that from the short distance the cold air travels, it must bring with it a considerable depressing influence upon the thermometer here.

In the last quarter, 1851, the prominent diseases were diarrhœa, acute dysentery, catarrh, and typhoid fever; of the latter, three cases terminated fatally. Predisposing and exciting causes of these were exceedingly rife; besides the tiresome marches the men had just accomplished, having returned from an expedition against the Navajoes, they were exposed to the inclement weather, at hard labor, engaged in preparing quarters for themselves, and subsisting upon poor food.

The records for the first quarter (1852) show one case of typhoid fever; two deaths having occurred—one from hypertrophy of the heart, and the other from injuries (internal) received by a fall.

In the second quarter we have mild diarrhœa and dysentery acuta, prevalent; yielding readily to ordinary treatment. I find in the third quarter that, in the majority of those diseases, the cause proceeded from eating the fruits of the *cactus opuntia* and *yucca augustifolia*. The several cases of intermittent fever in this quarter (third) were among recruits who had been much affected previously with it on the plains, or in the States.

In the last quarter, disease still occupies its favorite seat in the digestive organs and respiratory system, being chiefly catarrhus and diarrhœa; one case of pneumonia proving fatal.



Several cases of paronychia deserve, perhaps, particular attention, from the fact of their having followed each other so soon. It usually attacked the thumb and fore-finger, a short distance from the nail, preceded by slight constitutional disturbance. Out of five cases, three were of the sub-cutaneous cellular tissue; two of the deep fibrous tissues; there were several mild cuticular cases not taken on the sick report.

On those affected, who reported early, free incisions into the part, and the application of warm poultices afterwards, invariably put a stop to the disease, with one exception, which occurred in a man of debilitated constitution, who recovered after suffering much in general health, and the loss of the third phalange of the fore-finger.

With regard to the Navajo Indians in this vicinity, I have had no opportunity of observing disease among them; and, from what I can learn verbally, their maladies appear to be exceedingly simple. About eight years ago rubeola maligna made its appearance among them, diminishing their numbers greatly. In the treatment of cephalalgia and fevers, they practice local and general blood-letting; the instrument used being only a sharp piece of flint; in scari-fying the temples for the former disease, they apply the mouth to suck out the blood after making incisions; in general blood-letting, they confine themselves to no particular part, but only take care to select a small vein, anywhere over the body.

They are a robust and active people, usually inhabiting the country about Chai, Luncha, and Chusca; living in huts constructed of poles put up in a conical form, or in the cavities of rocks. Agriculture is carried on, to some extent, among them; raising from the soil maize and melons chiefly. They also manufacture, from wool, blankets of a very close texture, which, with the leggings and moccasins, form their sole raiment.

## DISEASES.

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	5,887	2,552	73	416	12.4
Second quarter.....	5,285	2,523	36	477	6.8
Third quarter.....	6,126	3,195	29	522	4.7
Fourth quarter.....	6,195	3,597	35	580	5.6
Annual ratio.....	5,873	11,867	173	2,020	29.5
Gun-shot wounds excluded.....		11,738	139	1,999	23.6

The average annual proportion of cases of disease occurring in New Mexico, to the mean strength of the forces, was 2.02 to 1; and the ratio of deaths, 1 to 33.94, or 2.9 per cent. The proportion of deaths to cases of disease was 1 to 68.60, or 1.45 per cent.

Excluding gun-shot wounds, and deaths therefrom, we have the proportion of cases treated to number of troops 1.99 to 1; of deaths to troops, 1 to 42.4, or 2.3 per cent; and of deaths to diseases, 1 to 84.44, or 1.18 per cent.

## REPORT ON THE SICKNESS AND MORTALITY

## FEVERS.

Quarters. ....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	5,887		5,285		6,126		6,195		5,873			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris continua communis.....	28	0	24	0	54	0	41	1	147	1	1 in 147	25
Febris intermittens quotidiana..	63	0	49	0	53	0	103	1	268	1	1 in 268	45.6
Febris intermittens tertiana....	63	0	89	0	66	0	87	0	305	0	0 in 305	52
Febris intermittens quartana....	1	0	11	0	5	0	0	0	17	0	0 in 17	2.9
Febris remittens.....	13	0	15	0	52	1	68	0	148	1	1 in 148	25
Febris typhus.....	7	5	6	2	20	7	10	5	43	19	1 in 2.2	7.3
Febris typhus icterodes .....	0	0	0	0	0	0	0	0	0	0	0 in 0	0
Total .....	175	5	194	2	250	8	309	7	928	22	1 in 42	158

*Eruptive fevers.*—Variola and varioloid have proved very fatal to the Indians and Mexican population of New Mexico, but comparatively few cases have occurred among the troops.

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters. ....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength .....	5,887		5,285		6,126		6,195		5,873				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Cholera Asiatica.....	0	0	0	0	0	0	0	0	0	0	0 in	0	
Diarrhoea.....	203	4	278	2	557	2	513	6	1551	14	1 in	111	264
Dysentery acuta.....	44	0	82	1	110	0	139	2	375	3	1 in	125	63
Dysentery chronica.....	5	4	7	1	15	2	25	1	52	8	1 in	6	8.8
Enteritis .....	0	1	0	0	3	0	2	1	5	2	2 in	5	0.8
Hepatitis acuta.....	3	1	3	0	2	0	1	0	9	1	1 in	9	1.5
Hepatitis chronica.....	5	0	0	0	1	0	1	0	7	0	0 in	7	1.1
Obstipatio.....	83	0	80	0	120	0	86	0	369	0	0 in	369	63.8
All other diseases of this system.....	106	2	117	1	191	0	144	0	558	3	1 in	186	95
Total .....	449	12	567	5	999	4	911	10	2926	31	1 in	94	498



## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength .....	5,887		5,285		6,126		6,195		5,873				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Bronchitis acuta et chronica..	36	1	28	1	7	0	20	1	91	3	1 in 30	15.5	
Catarrhus.....	293	0	144	0	86	0	350	0	873	0	0 in 873	148	
Phthisis pulmonalis.....	2	2	4	1	0	0	2	0	8	3	1 in 2.6	1.3	
Pleuritis .....	32	0	34	0	30	0	29	0	125	0	0 in 125	21	
Pneumonia .....	18	3	17	5	8	1	11	3	54	12	1 in 4.5	9.2	
All other diseases of this system .....	26	2	18	0	10	0	13	0	67	2	1 in 33	11.4	
Total .....	407	8	245	7	141	1	425	4	1218	20	1 in 61	207	
Rheumatismus .....	187	1	172	0	157	1	231	0	747	2	1 in 373	127	

Assistant Surgeon McParlin, in transmitting his report of the sick at Las Vegas for December, 1849, remarks that, "Since the middle of December this and the adjoining towns have been visited with an epidemic catarrh of quite a malignant character. Among the native population it has raged with a mortality as great as that ascribed to it by the English writers. The oldest residents speak of this as a disease new to the country. It is announced by a succession of rigors, with great febrile depression, violent pain in the head and ears, and a severe coryza, with copious defluxion from the eyes and nose; six hours after, a cough and limited expectoration harrass the patient; the slightest jar accompanying it, occasioning the most poignant distress, referred to the vertex and superior occipital region. In some cases, inflammation, tumefaction, and pain of the cervical and facial glands call for alleviation, respiration and deglutition being difficult therefrom. In others, no external swelling or discoloration is apparent; but a malignant cynanche inflicts far greater distress, and seems, for the second day, the prominent ailment. The third day, tumefaction and redness affect the tissues over the nasal and malar bones, and pain is complained of across the bridge of the nose, and in its fossæ extending along the infra orbital space. This symptom accompanied all the cases. Early prostration, severe jactitation, and wakefulness are present; and on the fourth or fifth day (perhaps with an alleviation of the cerebral symptoms) the patient is seized with an intense pain in the epigastrium, with great tenderness, on pressure, in the region of the ensiform cartilage and of the sternum; the recti muscles become hard, giving the sensation of a board under the hand. This symptom is prominent in the Mexican cases submitted to my notice, and is often preliminary to dissolution."

The troops in various portions of New Mexico have been afflicted with scurvy; the result of the usual causes of that disease—the use of salt meats and absence of all vegetables. With the cultivation of company and post gardens, the disease has almost entirely disappeared.





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ABSTRACTS

OF THE

PRINCIPAL DISEASES AND DEATHS

OCCURRING AMONG THE TROOPS

IN NEW MEXICO.

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## REPORT ON THE SICKNESS AND MORTALITY

## ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS

CLASSES OF DISEASES.		FIRST QUARTER.												AGGREGATE STRENGTH.	
		YEARS .....	1849.	1850.	1851.	1852.	1853.	1854.							
		MEAN STRENGTH .....	259.	815.	1,070.	1,059.	1,249.	1,435.	5,887.						
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.		
Fevers .....	Febris continua communis..	1	9	5	4	3	6	28	63	63	1	28	63		
	Febris inter. quotidiana .....		18	13	5	9	18	63	63	63	1	63	63		
	Febris intermittens tertiana.	4	10	4	7	5	33	63	63	63	1	63	63		
	Febris intermittens quartana						1	1	1	1	1	1	1		
	Febris remittens.	2	8		1	2		13	13	13		13	13		
	Febris typhus.		1	2	1	3	1	1	7	5	7	5	7	5	
Eruptive fevers .....	Erysipelas.		10	2	6	1	2	19	2	19	2	19	2		
	Varicella.							5	5	5		5	5		
	Varioloid.					1	3	4	4	4		4	4		
	Diarrhoea.	4	50	2	58	1	40	20	1	31	203	203	4		
Diseases of the organs connected with the digestive system.	Dysentery acuta.	1	12	11	8	3	9	44	44	44		44	44		
	Dysentery chronica.			1	3		3	1	1	5	4	5	4		
	Enteritis.				1								1		
	Hepatitis acuta.	2	1	1				3	1	3	1	3	1		
	Hepatitis chronica.			1			2		1	5		5			
	Obstipatio.	2	28	13	10	13	17	83	17	83		83	17		
Diseases of the respiratory system.	All other diseases.	6	18	1	26	14	23	19	106	106	2	106	2		
	Bronchitis acuta et chronica		6	7	1	3	4	16	36	36	1	36	1		
	Catarrhus.	4	33	43	83	36	94	293	293	293		293	293		
	Phthisis pulmonalis.		1		1		1	1	2	2		2	2		
	Pleuritis.	4	5	10	10	2	1	32	32	32		32	32		
	Pneumonia.	2	1	2	3	1	3	2	18	18	3	18	3		
Diseases of the brain and nervous system.	All other diseases.		10	5	4	1	7	26	26	26		26	2		
	Cephalalgia.		1	4	5	2		12	12	12		12			
	Delirium tremens.			3	1	2	7	13	13	13	1	13	1		
	Epilepsia.			1	1	2	1	5	5	5		5			
	Neuralgia.		1	1	2	8	4	16	16	16		16			
	All other diseases.	1	1	2	1	7	1	1	12	12	4	12	4		
Diseases of the urinary and genital organs.	Gonorrhoea.	12	16	22	13	17	29	109	109	109		109			
	Stricture urethrae.		1	3				4	4	4		4			
	Syphilis primitiva.	14	7	11	8	10	8	58	58	58		58			
	Syphilis consecutiva.		4	6	16	16	18	60	60	60		60			
	All other diseases.	2	17	10	4	10	14	57	57	57		57			
Diseases of the serous and exhalant vessels.	Ascites.														
	All other diseases		1		1		2	4	4	4		4			
	Periton.	1	3	1	2	1	2	10	10	10		10			
Diseases of the fibrous & muscular structures.	Podagra.					1		1	1	1		1			
	Rheumatismus.	2	34	54	23	1	30	187	187	187	1	187	1		
	Fistula.							2	2	2		2			
Abscesses and ulcers.....	Phlegmon et abscessus.	8	19	28	2	23	19	129	129	129	2	129	2		
	Ulcus.	1	12	3	15	18	30	79	79	79		79			
	Ambustio.		1	2	2	4	7	16	16	16		16			
	Amputatio.			2				2	2	2		2			
	Concussio cerebri.				1	1		3	3	3	1	3	1		
	Contusio.	3	22	35	27	32	51	170	170	170		170			
Wounds and injuries.....	Fractura.	1	6	2	3	1	4	19	19	19	1	19	1		
	Luxatio.		1	1		1		3	3	3		3			
	Pinatio.							3	3	3		3			
	Sub luxatio.	2	11	11	4	7	9	44	44	44		44			
	Vulnus incisum.	3	7	11	1	14	16	62	62	62	1	62	1		
	Vulnus laceratum.		15	7	14	11	17	64	64	64		64			
Miscellaneous .....	Vulnus punctum.	1	1	2	1	3	8	16	16	16	1	16	1		
	Vulnus sclopeticum.	2	2	4	2	4	3	45	23	59	28	59	28		
	Debilitas.		3	1	3	2	1	14	14	14	1	14	1		
	Ebrietas.			2	3	4	4	13	13	13		13			
	Hæmorrhoids.		5	4	5	5	6	25	25	25		25			
	Hernia.	3	1	1	1	1	1	8	8	8		8			
	Morbi cutis.		1		3	3	2	9	9	9		9			
	Morbi oculi.	2	9	14	9	8	19	61	61	61		61			
	Scorbutus.	1	11	1	9	2	6	36	36	36	3	36	3		
	All other diseases.		10	15	16	1	30	1	37	108	2	108	2		
Total .....		91	6	450	9	479	15	430	11	411	4	691	28	2,552	73



## OCCURRING AMONG THE TROOPS AT POSTS IN NEW MEXICO.

CLASSES OF DISEASES.	SECOND QUARTER.												AGGREGATE STRENGTH.		
	YEARS.....	1849.	1850.	1851.	1852.	1853.	1854.								
	MEAN STRENGTH..	243.	727.	1,042.	1,060.	1,164.	1,049.	5,255.							
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.		
Fevers .....	Febris continua communis .	1	.....	4	.....	4	.....	2	.....	11	.....	2	.....	24	.....
	Febris inter. quotidiana .....	.....	.....	12	.....	14	.....	5	.....	8	.....	10	.....	49	.....
	Febris intermittens tertiana .	2	.....	15	.....	10	.....	7	.....	19	.....	36	.....	69	.....
	Febris intermittens quartana .....	.....	.....	4	.....	4	.....	.....	.....	.....	.....	3	.....	11	.....
	Febris remittens .....	.....	.....	9	.....	.....	.....	2	.....	3	.....	1	.....	15	.....
	Febris typhus.....	1	1	1	1	1	.....	3	.....	.....	.....	.....	6	2	
Eruptive fevers .....	Erysipelas.....	.....	.....	3	.....	1	.....	.....	.....	1	.....	.....	5	.....	
	Variola.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	Varioloid.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	Diarrhœa.....	5	.....	47	1	57	.....	58	.....	69	1	42	.....	278	2
	Dysentery acuta.....	.....	.....	17	1	20	.....	40	.....	2	.....	3	.....	82	1
	Dysentery chronica.....	1	.....	1	1	.....	.....	1	.....	4	.....	.....	7	1	
	Enteritis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	Hepatitis acuta.....	.....	.....	1	.....	1	.....	1	.....	.....	.....	.....	3	.....	
Diseases of the respiratory system.	Hepatitis chronica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	Obstipatio .....	.....	.....	10	.....	20	.....	23	.....	15	.....	12	.....	80	.....
	All other diseases.....	4	.....	25	.....	19	.....	19	.....	27	.....	23	1	117	1
	Bronchitis, acuta et chronica .....	.....	.....	.....	.....	1	1	4	.....	3	.....	20	.....	28	1
	Catarrhus.....	7	.....	24	.....	14	.....	38	.....	28	.....	33	.....	144	.....
	Phthisis pulmonalis.....	1	.....	1	1	.....	.....	1	.....	1	.....	.....	4	1	
Diseases of the brain and nervous system.	Pleuritis.....	10	.....	8	.....	4	.....	9	.....	2	.....	1	.....	34	.....
	Pneumonia.....	2	1	2	1	4	2	5	.....	3	1	1	.....	17	5
	All other diseases.....	1	.....	11	.....	4	.....	.....	.....	1	.....	1	.....	18	.....
	Cephalalgia.....	1	.....	3	.....	4	.....	9	.....	3	.....	1	.....	21	.....
	Delirium tremens .....	2	1	1	1	5	1	1	.....	2	.....	5	1	16	4
	Epilepsia.....	.....	.....	2	.....	.....	.....	2	.....	2	.....	2	.....	8	.....
Diseases of the urinary and genital organs.	Neuralgia.....	.....	.....	2	.....	1	.....	5	.....	13	.....	5	.....	26	.....
	All other diseases.....	3	.....	1	.....	2	1	3	.....	2	.....	1	1	12	2
	Gonorrhœa.....	11	.....	21	.....	25	.....	40	.....	25	.....	34	.....	156	.....
	Stricture urethre.....	.....	.....	.....	.....	4	.....	1	.....	4	.....	2	.....	11	.....
	Syphilis primitiva.....	9	.....	10	.....	5	.....	14	.....	13	.....	7	.....	58	.....
	Syphilis consecutiva.....	4	.....	6	.....	9	1	18	.....	19	.....	13	.....	69	1
Diseases of the serous and exhalent vessels.	All other diseases.....	1	.....	12	.....	7	.....	12	.....	10	1	8	.....	50	1
	Ascites.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	All other diseases.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	2	.....	3	.....
Diseases of the fibrous & muscular structures.	Pernio.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....
	Podagra.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	Rheumatismus .....	17	.....	29	.....	37	.....	25	.....	24	.....	40	.....	172	.....
Abscesses and ulcers....	Fistula.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	Phlegmon et abscessus.....	3	.....	19	.....	27	.....	18	.....	21	.....	15	.....	103	.....
	Ulcus.....	2	.....	10	.....	5	.....	22	.....	13	.....	14	.....	66	.....
	Ambustio.....	.....	.....	2	.....	2	.....	5	.....	.....	.....	4	.....	13	.....
	Amputatio.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	
	Concussio cerebri.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	
Wounds and injuries....	Contusio.....	6	.....	18	.....	28	.....	33	.....	43	.....	33	.....	161	.....
	Fractura.....	1	.....	5	.....	2	.....	1	.....	.....	.....	.....	.....	9	.....
	Luxatio.....	.....	.....	.....	.....	.....	.....	1	.....	4	.....	1	.....	6	.....
	Sub-luxatio.....	5	.....	7	.....	4	.....	6	.....	7	.....	12	.....	41	.....
	Vulnus incisum.....	4	.....	1	.....	4	.....	6	.....	6	.....	10	.....	31	.....
	Vulnus laceratum .....	1	.....	8	.....	3	.....	8	.....	12	.....	3	.....	35	.....
Miscellaneous .....	Vulnus punctum.....	.....	.....	.....	.....	6	.....	1	.....	2	.....	5	.....	14	.....
	Vulnus sclopeticum.....	2	.....	4	2	.....	.....	4	.....	7	.....	4	1	21	3
	Debilitas.....	1	1	2	.....	1	.....	2	.....	1	.....	4	.....	11	1
	Ebrietas.....	.....	.....	5	.....	.....	.....	7	1	9	.....	3	.....	24	1
	Hæmorrhœis.....	2	.....	4	.....	13	.....	11	.....	11	.....	2	.....	46	.....
	Hernia.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	2	.....	
Miscellaneous .....	Morbi cutis.....	.....	.....	2	.....	5	.....	3	.....	1	.....	3	.....	14	.....
	Morbi oculi.....	3	.....	6	.....	10	.....	12	.....	20	.....	13	.....	64	.....
	Scorbutus.....	17	1	20	1	70	2	22	.....	9	1	6	.....	144	5
	All other diseases.....	.....	.....	10	.....	17	2	15	.....	28	.....	32	2	102	4
	Total.....	130	5	405	10	475	10	528	1	512	4	473	6	2,523	36

## REPORT ON THE SICKNESS AND MORTALITY

## ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS

CLASSES OF DISEASES.	YEARS .....	THIRD QUARTER.												AGGREGATE STRENGTH.	
		1849.		1850.		1851.		1852.		1853.		1854.			
		MEAN STRENGTH .....		684.		873.		1,244.		1,168.		1,094.		1,063.	
SPECIFIC DISEASES.		Cases	Died.	Cases	Died.	Cases	Died.	Cases	Died.	Cases	Died.	Cases	Died.	Total cases.	Total died.
Fevers .....	Febris continua communis.	1	13	2	17	8	13	54							
	Febris inter. quotidiana.	14	15	7	3	12	2	53							
	Febris intermittens tertiana.	5	18	4	9	18	12	66							
	Febris intermittens quartana.		2	1	2			5							
	Febris remittens.	11	6	4	2	21	8	52	1						
	Febris typhus.	1	1	2	5	4	2	11	2	20	7				
Eruptive fevers .....	Erysipelas.	1	17	1	1	1	1	21							
	Varicella.							1	1						
	Varicellula.							5	5						
Diseases of the organs connected with the digestive system.	Cholera Asiatica.														
	Diarrhoea.	89	1	88	160	81	1	104	95	557	2				
	Dysentery acuta.	7	22	26	25	13	17	110							
	Dysentery chronica.	2	2	4	2	2	5	15	2						
	Enteritis.			1			1	1	3						
	Hepatitis acuta.						1	1	2						
	Hepatitis chronica.					1		1	1						
	Obstipatio.	29	11	34	20	17	9	130							
	All other diseases.	10	52	41	26	38	24	191							
	Bronchitis, acuta et chronica.		1	3	1		2	7							
Diseases of the respiratory system.	Catarrhus.	5	12	13	21	19	16	86							
	Phthisis pulmonalis.														
	Pleuritis.	3	4	9	11	2	1	30							
	Pneumonia.			1	2	1	5	8	1						
	All other diseases.	3	2	1	2	1	1	10							
	Cephalalgia.	2	3	1	13	13	4	36							
	Delirium tremens.	1	4	1	1	4	5	16	1						
Diseases of the brain and nervous system.	Epilepsia.	1	2	1	2		1	7							
	Neuralgia.	1	3	1	2		3	19							
	All other diseases.	2	1	2	1	1	3	12	2						
	Gonorrhoea.	14	29	25	51	31	27	176							
Diseases of the urinary and genital organs.	Stricture urethrae.		3	1		3	1	8							
	Syphilis primitiva.	17	18	12	20	9	21	97							
	Syphilis consecutiva.	1	4	16	15	14	14	64							
	All other diseases.	4	15	6	10	13	12	60							
Diseases of the serous and exhalant vessels.	Ascites.	1			1	1		2	1						
	All other diseases.	2		1	1		3	7							
Diseases of the fibrous & muscular structures.	Pernio.														
	Podagra.														
	Rheumatismus.	20	1	18	30	31	39	157	1						
Abscesses and ulcers .....	Fistula.				1			1							
	Phlegmon et abscessus.	42	29	28	1	22	17	160	1						
	Ulcus.	11	8	10	16	1	21	80	1						
	Ambustio.		1	4	3		3	16							
	Amputatio.	1	1		1			3							
	Concussio cerebri.					1	1	1	1						
	Contusio.	18	39	31	42	41	36	207							
Wounds and injuries .....	Fractura.	1	1	1	2	3	3	11							
	Luxatio.	1			1	1	1	4							
	Sub luxatio.	4	8	2	11	10	13	48							
	Vulnus incisum.	3	5	9	15	13	10	55							
	Vulnus laceratum.	4	7	6	1	8	17	48	1						
	Vulnus punctum.	1	4	4	6	1	7	23	1						
	Vulnus sclopetarium.	5	1	3	4	1	2	37	2						
	Debilitas.	2	2	3	7	3	1	18							
	Ebrietas.	1	1	3	10	11	16	42							
	Hæmorrhœis.	3	4	13	15	5	4	44							
	Hernia.		2	1	3	1		7							
Miscellaneous .....	Morbi cutis.	1	1	1	3	1	5	12							
	Morbi oculi.	6	12	8	10	9	21	66							
	Scorbutus.	14	1	33	1	21	8	85	2						
	All other diseases.	17	7	14	1	33	1	149	2						
	Total .....		379	5	534	6	520	6	596	8	614	2	552	2	3,195



## OCCURRING AMONG THE TROOPS AT POSTS IN NEW MEXICO.

CLASSES OF DISEASES.	YEARS .....	FOURTH QUARTER.												AGGREGATE STRENGTH.	
		1849.		1850.		1851.		1852.		1853.		1854.			
		MEAN STRENGTH .....		619.		1,106.		1,034.		1,062.		1,218.		1,156.	
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
Fevers.....	Febris continua communis .	8	.....	8	1	8	.....	3	.....	10	.....	4	.....	41	1
	Febris inter. quotidiana. ....	20	.....	23	1	6	.....	17	.....	28	.....	9	.....	103	1
	Febris intermittens tertiana	16	.....	27	.....	8	.....	7	.....	8	.....	21	.....	87	.....
	Febris intermittens quartana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Febris remittens .....	7	.....	8	.....	.....	.....	1	.....	.....	.....	52	.....	68	.....
Eruptive fevers .....	Febris typhus.....	.....	.....	2	.....	5	3	1	1	1	.....	1	1	10	5
	Erysipelas .....	10	2	13	1	4	.....	1	.....	3	.....	.....	.....	31	3
	Varicella .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	.....	6	.....
Diseases of the organs connected with the digestive system.	Varioloid .....	.....	.....	.....	.....	.....	.....	.....	.....	7	.....	2	.....	9	.....
	Cholera Asiatica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Diarrhoea .....	57	1	123	1	80	3	76	1	61	.....	116	.....	513	6
	Dysentery acuta .....	53	1	29	.....	18	.....	18	.....	5	1	16	.....	139	2
	Dysentery chronica.....	1	.....	1	1	5	.....	8	.....	1	.....	9	.....	25	1
	Enteritis.....	.....	.....	1	1	.....	.....	.....	.....	1	.....	.....	.....	2	1
	Hepatitis acuta .....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
	Hepatitis chronica .....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....
	Obstipatio .....	7	.....	14	.....	19	.....	13	.....	13	.....	20	.....	86	.....
	All other diseases .....	17	.....	39	.....	22	.....	33	.....	22	.....	11	.....	144	.....
Diseases of the respiratory system.	Bronchitis, acuta et chronica	.....	.....	10	1	4	.....	3	.....	1	.....	2	.....	20	1
	Catarrhus .....	34	.....	84	.....	93	.....	31	.....	36	.....	72	.....	350	.....
	Phthisis pulmonalis .....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	2	.....
	Pleuritis.....	6	.....	9	.....	8	.....	4	.....	1	.....	1	.....	29	.....
	Pneumonia .....	1	.....	4	1	.....	.....	3	1	1	1	2	.....	11	3
Diseases of the brain and nervous system.	All other diseases.....	.....	.....	3	.....	.....	.....	1	.....	6	.....	3	.....	13	.....
	Cephalalgia .....	1	.....	4	.....	5	.....	8	.....	5	.....	1	.....	24	.....
	Delirium tremens .....	1	.....	2	1	1	.....	4	.....	3	1	4	.....	15	2
	Epilepsia .....	1	.....	2	.....	.....	.....	2	.....	1	.....	1	.....	7	.....
	Neuralgia .....	2	.....	2	.....	2	.....	3	.....	3	.....	4	.....	16	.....
Diseases of the urinary and genital organs.	All other diseases .....	2	1	3	1	2	1	2	.....	1	.....	5	.....	15	3
	Gonorrhoea .....	22	.....	37	.....	27	.....	19	.....	22	.....	38	.....	165	.....
	Stricture urethræ .....	1	.....	2	.....	.....	.....	1	.....	.....	.....	.....	.....	4	.....
	Syphilis primitiva .....	11	.....	12	.....	10	.....	13	.....	7	.....	33	.....	86	.....
	Syphilis consecutiva .....	1	.....	5	.....	19	.....	24	.....	13	.....	9	.....	71	.....
Diseases of the serous and exhalant vessels.	All other diseases.....	5	.....	13	.....	8	.....	7	.....	9	.....	13	.....	55	.....
	Ascites .....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....
	All other diseases.....	.....	.....	.....	2	.....	.....	.....	.....	1	.....	.....	.....	3	.....
Diseases of the fibrous & muscular structures.	Perno .....	2	.....	12	.....	7	.....	8	.....	.....	.....	1	.....	30	.....
	Podagra.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....
	Rheumatismus.....	33	.....	49	.....	33	.....	35	.....	36	.....	45	.....	231	.....
Abscesses and ulcers....	Fistula .....	.....	.....	2	.....	.....	.....	1	.....	.....	.....	.....	.....	3	.....
	Phlegmon et abscessus.....	32	.....	38	.....	31	.....	29	1	28	.....	35	.....	193	1
	Ulcus .....	12	.....	9	.....	12	.....	13	.....	17	.....	18	.....	81	.....
Wounds and injuries....	Ambustio.....	3	.....	.....	1	.....	.....	2	.....	5	.....	1	.....	12	.....
	Amputatio.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	1	.....	3	.....
	Concussio cerebri.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	2	.....
	Contusio .....	15	.....	57	.....	46	.....	43	.....	64	.....	71	.....	296	.....
	Fractura .....	1	.....	4	.....	3	.....	2	.....	5	.....	3	1	18	1
	Luxatio .....	.....	.....	3	.....	1	.....	1	.....	.....	.....	3	.....	8	.....
	Sub luxatio.....	5	.....	2	.....	3	.....	9	.....	15	.....	11	.....	45	.....
	Vulnus incisum.....	7	.....	8	.....	12	.....	21	.....	9	.....	11	.....	68	.....
	Vulnus laceratum.....	7	.....	9	.....	20	.....	5	.....	16	.....	16	.....	73	.....
	Vulnus punctum.....	2	.....	3	.....	4	.....	2	.....	3	.....	4	2	18	2
Miscellaneous .....	Vulnus sclopeticum.....	1	.....	1	1	2	.....	.....	.....	1	.....	7	.....	12	1
	Debilitas .....	3	.....	3	.....	1	.....	3	.....	1	.....	1	.....	12	.....
	Ebrietas .....	1	.....	6	.....	3	.....	9	.....	7	.....	9	.....	35	.....
	Hæmorrhoids .....	5	.....	9	.....	6	.....	7	.....	11	.....	9	.....	47	.....
	Hæma .....	3	.....	.....	2	.....	.....	2	.....	.....	.....	.....	.....	7	.....
	Morbi cutis.....	1	.....	.....	.....	.....	.....	1	.....	3	.....	5	.....	10	.....
	Morbi oculi .....	11	.....	9	.....	11	.....	11	.....	14	.....	23	.....	79	.....
	Scorbutus .....	5	.....	18	1	13	.....	3	.....	1	.....	.....	.....	40	1
All other diseases.....	16	.....	11	.....	14	.....	11	.....	23	.....	45	.....	120	.....	
Total.....		449	5	735	12	584	7	522	4	531	3	776	4	3,597	35





# CALIFORNIA.

## SOUTHERN DIVISION.

FOLLOWING to a certain extent the plan of classifying the military stations into regions having similar climatological features, the posts on the Pacific slope will be considered in three subdivisions—southern, middle, and northern. The first two include the whole State of California—the southern being all that portion lying south of the thirty-seventh parallel of latitude, and the middle the portion north of that line. The northern division embraces the Territories of Oregon and Washington.

In the southern division the troops have occupied Fort Yuma, San Diego, San Luis Rey, Rancho del Chino, Rancho de Jurupa, Fort Tejon, Monterey, and Fort Miller.

### FORT YUMA.

“Fort Yuma is situated on a high rocky hill on the west bank of the Colorado, opposite the mouth of the Rio Gila, and eighty miles from the head of the Gulf of California. The valley of the Colorado averages seven miles in width, and is bounded on either side by rocky barren mountains and sand-hills, which separate it from the immense deserts by which it is surrounded. This post was established in February, 1852, and for a time the soldiers were in the field operating against Indians, in which duty they underwent an unusual amount of fatigue and exposure, being subjected to long marches under an almost tropical sun, and that without water, and to the cold and chilly nights of March, April, and May; while the difficulties in tracking the enemy through almost impenetrable thickets, and over the ever-changing sands of the desert, were almost insurmountable.” (*Quarterly report of Assist. Surgeon J. J. Milham: 1852* )

The principal number of cases of diarrhœa, dysentery, and scorbutus reported in the abstract for 1852 occurred at this post, the men being for a time destitute of vegetables, and deprived of the ordinary necessities of life.

Fort Yuma is noted for its excessive temperature and absence of rain. The average mean temperature for the year is  $73^{\circ}.62$ , for the summer  $89^{\circ}.95$ , the mercury occasionally rising to  $116^{\circ}$ . The mean annual amount of rain is only 3.24 inches. Although such is the official record of meteorological observations at this post, it appears that the actual temperature is even more excessive than above stated. In acknowledging the receipt of a copy of the “Army Meteorological Register,” in June, 1856, Assistant Surgeon H. R. Wirtz writes to the Surgeon General as follows:

“I beg leave to remark that I have been surprised at the low maximum temperatures during the summer season assigned to Fort Yuma, as they are not at all in accordance with the private observations taken by officers of the post at other situations than the hospital. The temperature, I have been informed on the very best authority, has been as high, in June and July, as  $124^{\circ}$ , and yet I find no such record in the published tables.

“In endeavoring to seek a reason for such a wide discrepancy, I questioned my hospital steward closely with regard to the manner in which the observations had been taken previous to my arrival. He informs me that, for several years back, the thermometrical record has been kept by him from a thermometer suspended in the coolest part of the hospital, and it always denoted

the lowest possible temperature that could be obtained in that building. The hospital was built of adobes, and covered with rushes and mud, and the floor was constantly kept damp by sprinkling with water. Now, any record kept in such a building must be fallacious, and it gives no idea of the absolute temperature of the atmosphere. My steward also informs me that he frequently observed a difference of  $10^{\circ}$  between the thermometer suspended in the damp ward of the hospital and another one hanging on a post in front of the hospital, completely shaded and protected from reflected rays.

"I cannot think, therefore, that the thermometrical record for previous years can be relied on, nor that Fort Yuma has received its full share of justice, as the hottest military post on the continent of North America, and, perhaps, in the world. Although this spring we have had very cold winds, the thermometer, as I now write, stands at  $113^{\circ}$ , and it is not considered hot here until the mercury has risen some  $10^{\circ}$  to  $12^{\circ}$  above this point.

"Hereafter, I will see that the record is kept in the most unexceptionable manner; and if a difference be perceived between the observations of this summer and previous ones, I hope it will be assigned to the proper cause.

"I have had the thermometer suspended on a post, in a passage-way between two sets of officer's quarters. The passage-way is 24 feet wide and over 50 feet long, completely shaded by a good roof extending from one set of quarters to the other. The thermometer is consequently 12 feet from either building, and cannot be affected by the walls it faces, so that it receives no reflected heat, and a free current of air passes over it."\*

#### MEDICAL TOPOGRAPHY AND DISEASES OF SAN DIEGO.

By Assistant Surgeon John E. Summers: 1852.

The military post at San Diego is situated near the head of a valley, perhaps three-quarters to one and a half mile in width, which runs W.S.W. and E.N.E., six miles distant from the old Presidio N.E., and eight miles from the sea-shore W.S.W. The valley opens out on a small plain of some two or three miles in extent near the town, and running to *Punta Falsa*. The height of the hills and table-land on either side of the valley is about 250 feet.

Some 15 or 20 miles to the east of the post is a range of mountains running north and south, broken in places, with some very pretty valleys intervening, which mountains extend over a distance in width some 40 miles, and bound the desert on the west side of Rio Colorado. The general aspect of the country is *barren* from June until December, at which time vegetation generally sets in.(?)

The coldest month in the year is December, (thermometer  $34^{\circ}$ , F., the lowest observation taken in the last three years); and the warmest weather is in July, August, and early part of September; and the most agreeable month in the year is February.

The diseases which have occurred at this post have not been influenced *particularly* by the climate. In the year 1840 (as ascertained from the mission books and the oldest inhabitants) there were 2,000 (Mexicans?) and between 600 and 800 Indians belonging to this mission (San Diego); there are now between 300 and 400—men, women, and children. In the year 1842 or 1843 the small-pox killed much more than one-half of the Indians on the coast of California, and is now dreaded more by them than any other disease. Venereal diseases are the next most fatal, and perhaps, in a succession of years, kill many more even than the small-pox ever did. Next to venereal diseases are the diseases of the chest, which kills very many of them. In some *particular places* they suffer from intermittent and bilious fevers, of which many die; but in this immediate vicinity a case of intermittent or remittent fever is seldom ever seen, unless contracted elsewhere.

\* The latest monthly register received at the Surgeon General's office from Assistant Surgeon Wirtz, at Fort Yuma, is for July, 1856. The thermometrical record is as follows: Mean for the month, at 7 A. M., 88.80; at 2 P. M., 108.12; at 9 P. M. 91.09. Average daily mean for the month, 95.36; maximum, 116; minimum, 80. At 3 o'clock P. M. the thermometer is usually from  $1^{\circ}$  to  $3^{\circ}$  higher than at 2 P. M. July is usually the *hottest* month at Fort Yuma.—C.



## SAN LUIS REY, RANCHO DEL CHINO, AND RANCHO DE JURUPA.

**SAN LUIS REY.**—The position occupied by the troops is in the town of that name, about forty miles northwest from San Diego. It is situated in a wide valley opening to the sea, and but four or five miles from it.

**RANCHO DEL CHINO**—The position thus designated is in a wide valley, near the Rio Santa Ana, thirty five miles from the coast, and one hundred and twenty miles north of San Diego. The "ranch" on which the post is located covers nine square leagues, but the valley, surrounded by hills, extends hundreds of miles, presenting an almost uninterrupted view in the absence of foliage. In summer there is very little water in the streams, or living grass on the plains, though in winter the whole country is irrigated by mountain torrents and falling showers. The climate is mild, as a general thing, though occasionally very warm; the air pure and dry. (*Quarterly reports of Assistant Surgeon Adkins.*)

**RANCHO DE JURUPA.**—The troops stationed at Rancho del Chino were transferred to Rancho de Jurupa in September, 1852. The new position is in the valley of the Santa Ana, which is from three to three and a half miles wide, terminating on either hand in rocky, rugged hills. Through the centre runs the Santa Ana or San Bernardino river, a turbid stream two and a half or three feet deep in summer, with a rapid current, and an average width of twenty yards. The banks are abrupt, some eight or ten feet high, and for some hundred yards level and covered with cottonwood, alder, and a species of willow, whose freshness and verdure strikingly contrast with the parched country around. Beyond this the surface ascends to the hills in steps or with a gradual slope. The soil is dry, light, and sandy, but, properly irrigated, exceedingly productive. The water everywhere soft and sweet. The position is healthy. (*Quarterly report of Assistant Surgeon R. O. Abbott.*)

## MEDICAL TOPOGRAPHY AND DISEASES OF MONTEREY, CALIFORNIA.

By Assistant Surgeon William S. King: 1852.

Forty leagues from San Francisco, and upon the shores of Monterey bay, is situated Monterey, probably the most beautiful town on all the coast of California. In all that constitutes beauty of scenery, derived from a proper proportion of woodland, water, hills, and distant mountains, Monterey will bear a comparison with other places of more celebrity: and its claims in this respect are acknowledged by all travellers. The houses (mostly adobe) are built on a broad, gentle slope of land, about two miles from Point Pinos, the southern extremity of the bay. They are scattered over an extent of three-quarters of a mile, and mirrored in the placid waters of the bay, stand in bold relief against a back-ground of extensive forest. The hills in the rear increase in height as they run to the southeast, till, at a distance of forty miles, they are merged in the high mountains of the coast range. The northern shore of the bay is twenty miles distant, bending so far to the west that the Pacific is not visible from any part of the town. The peninsula intervening between the bay and the Pacific shore is covered by a fine growth of tall and stately pines, with a few scattering oaks. About a hundred yards from the southern shore of the bay, on a level with it, and skirting the eastern edge of the town, is a low, flat, sandy plain, in the centre of which is a lagoon, near half a mile in length, by one-eighth in width. Further to the east, in the same plain, and nearly parallel with the shore of the bay, are two other lagoons, of a large size, and at a distance of one and two miles from the town. Beyond the last lagoon the land rises gradually by a circuitous elevation for about six miles, and from thence by a regular descent to the Salinas river—a large stream emptying into the bay about eight miles east from Monterey. Beyond this river are what is called the Salinas plains, a broad, level prairie, nine miles wide, extending to the low hills of the San Juan mountains.

During the prevalence of the high tides in the spring, the water of the bay flows into the

lagoon at the edge of the town, and keeps it full; but at other seasons, particularly at the latter part of the dry season, the waters of the lagoon recede towards the centre, leaving a good deal of vegetable matter exposed to the action of the sun, the odor from which is far from agreeable when sufficiently near to inhale it. The water of this lagoon is so brackish at all seasons of the year that cattle will not drink it.

Three miles south of Monterey is Carmel valley, watered by a river of the same name which empties into the Carmel bay. The soil is rich and alluvial, and adapted to agriculture. Carmel and Salinas valleys are the only points now under cultivation in the vicinity of Monterey. Just beyond Carmel valley is Point Lobos, a promontory on the coast, celebrated for the number of seals and sea-lions always to be found there. In Carmel valley is situated the mission of San Carlos, founded in 1770 by Padre Junipero Serra, a Franciscan friar. The old church is still in good repair, while the other buildings have in a great measure fallen to ruin. At this mission is an orchard of pear-trees in fine bearing, being the only fruit that appears to thrive well in this vicinity.

Monterey redoubt, a few hundred yards to the north of the town, is placed upon an elevation of 140 feet above the bay. It is bounded by a picket-work, and encloses a sufficient area for a parade-ground, and a garden for the use of the troops. On the side of the redoubt next the bay is a battery, mounting twenty heavy guns. The quarters for the officers and men are built of logs, neatly plastered and whitewashed, and are commodious and comfortable.

As the climate and character of disease at the fort and in the town of Monterey are precisely alike, it will be understood that both are included in my remarks. The population of Monterey is from six to eight hundred, three-fourths of whom are native Californians.

*Climate.*—The atmosphere is humid, the temperature agreeably warm and equable; the prevalent winds are sea-breezes from the west and north; the land winds from the east and south are much less prevalent, blow less strongly, and may frequently be detected alone by the uncomfortable feelings they produce, without reference to the weather-vane. There is one rainy season, from November till April. This is about the average time the rains begin and terminate, although sometimes considerable rain will fall as early as October, and continue until May. During this period there are frequent intervals of fine weather of such extraordinary beauty and balmy temperature, that the traveller arriving on the coast might well imagine, with Colonel Fremont, that it resembled the climate of southern Italy. During the dry season the fogs rise from the sea late in the afternoon, float over the town, and disperse usually by 9 p. m. There is also a fog generally in the mornings until 10 a. m. I may add here that these fogs are found on the entire coast of California as far south as Point Concepcion. In the rainy season, at which time the winds are from the south and east, there are no fogs; the sky, when not raining, being clear and cloudless. To give some idea of the temperature of this place, the following memoranda, extracted from the meteorological register of the post, is here inserted:

Mean annual temperature for 1850, 55° Fahrenheit; coldest day, March 25th (mean for the day), 39°; warmest day, September 18th (mean for the day), 77°.50; highest range (September), 94°; lowest range (December), 30°. Mean temperature for 1851, 57°.54; coldest day (being the mean for that day), 46°.50; warmest day (being the mean for that day), 73°.50; highest range (August), 75°; lowest range (December), 40°. There is a difference between the mean temperature of the summer and winter months of only from 6° to 7°; and hence the annual temperature is very uniform, although the diurnal changes may be very considerable.

*Diseases.*—I have little information of the diseases of this neighborhood previous to my arrival at Monterey in the spring of 1849. In 1844, I am informed, the small-pox visited this place, carrying off a large number of the inhabitants, chiefly Indians, who had not been vaccinated. At some of the missions in California, at the same period, nearly the entire population died of the same disease.

I do not know that any particular disease can be said to be endemic to this locality. The diseases from which the inhabitants are entirely free, are contagious or infectious fevers (except



the exanthemata), calculus, diabetes; those from which they are nearly exempt, are consumption, dyspepsia, aneurism, and malignant tumors; and those which are mild, and of rare occurrence, are diarrhœa and dysentery. On my arrival in Monterey in 1849, I found whooping-cough and measles of a mild form prevailing in the town. On inquiry I learned that these diseases were unknown here previous to the arrival of the Americans in 1846, who brought them with them from the States. A few cases of these complaints occurred here the following year, since which time they have disappeared, and owing to the peculiar climate, and the prevalence of the strong and constant winds from the ocean, I do not believe they will reappear until imported *de novo*. During their prevalence some cases of rubeola so much resembled scarlatina that it was extremely difficult to distinguish one from the other. Some cases of scarlatina were reported to me, but I am unable to say whether they were genuine, not having seen them. So far as I was acquainted (and my practice was very general throughout the town), but few cases proved fatal.

My predecessor, Assistant Surgeon Murray, has reported several cases of typhoid fever in Monterey, in the fall of 1847. These cases occurred among recruits just arrived from a protracted sea voyage, and are, no doubt, attributable to the long confinement on ship-board, and a want of a proper supply of fresh and wholesome food. Since that period to the present time, I am not aware of any instance of this fever, except one in an emigrant who arrived at Monterey overland, after enduring incredible hardships and sufferings, and who died shortly after his arrival.

Although now and then intermittents are met with here, yet in every instance, according to my experience, they are found among recruits, who have contracted the disease elsewhere, or miners, who have been living in the valleys of the Sacramento and San Joaquin, where the disease prevails extensively, and who have come here for the benefit of their health. Off from the coast, as far interior as the Salinas river, a few cases are met with, but I have never known a case of intermittent fever *originating* in Monterey.

The only epidemic common here is influenza, and in the autumn, particularly when the winds blow from the land, (which they usually do a short time before the advent of the rain), nearly the entire population become affected. I am inclined to believe, owing to the situation of the lagoons already described, that, were it not for the setting in of the rain shortly after the commencement of the land breezes, Monterey would be much more unhealthy, it being to the seaward of these lagoons and, therefore, exposed to any injurious influences emanating therefrom. To the unfavorable influences of these winds the inhabitants are accustomed to ascribe an unusual feeling of discomfort and want of energy felt at this time.

As many of the people live in low adobe houses without board floors, and in many instances, without windows, the only means of ingress being a very low door-way, it will follow as a matter of course, that these dwellings will be low, damp, and illy-lighted and ventilated. If to these causes be added coarse and badly cooked food, and the practice of the whole family sleeping in one apartment, it will not be surprising, that, as a result of this mode of life alone, scrofula and summer complaint of children, and diseases of the lungs will occasionally be found, without supposing anything in the climate disposing to these complaints. Scrofula is of rather rare occurrence; the two latter are more common. More children die of cholera infantum and lobular or infantile pneumonia than from any other disease. These affections, as I before observed, are produced more by the mode of living than any climatic agency. It is the custom among all classes of native Californians to clothe their children very scantily until they attain the age of four or five years. Before this period no shoes nor stockings are used, the only garment worn being a single short petticoat of thin calico, and often, indeed, are without any clothing whatever. During the rainy season, the lower extremities of the children are constantly cold and damp, and, as fire-places and chimneys are almost unknown, their garments are seldom dry, and in this condition they usually sleep on mats laid on a ground floor. To

these causes are to be ascribed also the catarrhal affections so common to children, and the pleurisy frequently met with in adults.

Asthma is a disease of rare occurrence in Monterey or in California. I have seen but two cases in three years.

The Asiatic cholera has not as yet visited this place. During the season that cholera prevailed in California, it began in Sacramento valley; next we find it in San Francisco, and proceeding to San José, passed in a southerly direction to the eastward of Monterey, to San Louis Obispo and Santa Barbara. None of the premonitory symptoms of this epidemic were ever present at this place. The cause of this exemption is involved in mystery.

But two cases of diarrhœa and dysentery are reported in my returns of the sick for the past year.

It will be inferred, from the foregoing sketch of the diseases of this post and vicinity, that it is a post enjoying a high degree of salubrity, and also from the fact that there are no diseases of peculiarity or importance, that no prominence can be given to any class of affections, or any points of striking character can enter into this account.

Before closing this paper with a brief allusion to some of the diseases of women of this region, I will barely allude to one peculiarity I have observed in the diseases not only of Monterey, but in all California, and that is the extreme tendency to functional disturbance of the brain. What I allude to is the fact that, in diseases (often of a mild character) which, elsewhere and in similar circumstances, are unattended by the slightest mental aberration, are in California often accompanied by impaired intellect and sometimes delirium. It is owing to this peculiarity, I think, that delirium tremens is found to follow very slight excesses in drinking, and which I before supposed to be entirely inadequate to produce this affection. A contrary opinion, I am aware, exists to some extent here; but I believe it is founded in error, and that all who have studied this subject will agree with me that no one can indulge in the use of spirituous liquors with the same impunity in California as elsewhere. Insanity, it is well known, is very frequent in California, where it is true the predisposing causes exist to an unusual extent in the excited condition of the country, yet how much is due to the influence of climate remains yet to be determined. In this small town there are five cases of confirmed insanity of long standing. I have before, in my reports, mentioned the disposition of the slightest cuts or abrasion of the cuticle, if not immediately protected from the influence of the air, to take on inflammation, which frequently degenerates to ulcers of great obstinacy and long duration. This has been observed in all parts of the country, and may be owing as much to the character of diet as to atmospheric influence. My own impression is, that it is due mostly to the latter influence, as it is found to exist where there is apparently no want of proper aliment.

I have heard of many cases of impaired memory charged to the climate of California, but I have no certain evidence that this is true; yet, judging from the complaints of eastern friends, and the many instances of entire forgetfulness and disregard of the strongest of human ties by those sojourning in this country, one might readily believe that some potent spell, like the Lethean waters of classic story, was exerted by the gentle winds of the Pacific coast.

*Diseases of women.*—The diseases peculiar to women, are far more common in Monterey than any other class of disorders. Of these, the most common are leucorrhœa, prolapsus uteri, and deranged menstruation. These affections are more numerous in proportion to the population in Monterey than in any community I have ever known. The two first-named are, I believe, owing to the mode of treating parturient women, practised by the natives of the place. It is the custom in Monterey, when labor begins, to place the woman on a chair in the middle of the room, and a rope is fastened to the rafters above her head, which she is directed to pull. Round her abdomen, a broad towel, or rebosa, is passed, the ends crossed behind, and entrusted to assistants, who are instructed to tighten it when the abdominal tumor descends during the pain, and *belay there* (as it were) until the arrival of the next pain, when it is hauled *taut* again, so as to hold on each time to the progress made, and not permit the usual ascent of the tumor.



after the subsidence of the pain. With the same view, a strong man is frequently seated behind the woman, who, with his hands placed on her abdomen, makes strong pressure downwards, at each pain, with the idea of assisting, by mechanical force, the contractions of the uterus. All this time the midwife (generally some old woman) is seated in front with one, and, if possible, both hands, in the vagina, making all the traction in her power. When the woman and her assistants are fatigued, she is placed upon her knees, on the floor, but without relaxing any of the means and appliances which would cause them to lose the advantage already gained. These violent measures often prove fatal to both mother and child. Usually, on the termination of labor, the woman is completely exhausted. From the injury done to the soft parts by the long and rough handling, inflammation and ulceration often ensue, and thus laying the foundation of uterine and vaginal disease and displacement of the uterus. Immediately after delivery, and when the poor woman is nearly worn out, and in a more or less excited state, and the nervous system in an exceedingly susceptible condition, and disposed to receive strong impressions from slight causes, it is the universal custom for all acquaintances, however slight, to visit, with one accord, the new mother, so that her room will resemble an evening party, being filled with numerous guests, who do not hesitate to sit for hours, in loud conversation, and regale themselves meanwhile in smoking paper cigarettes. When we consider how much lying-in-women often suffer from not being kept in a tranquil and quiet state after confinement, and how important to her well-doing is rest and seclusion, we may readily conceive the unfortunate results of an opposite course, and understand why more untoward circumstances occur to such women here than ordinarily. Within the last few years, the influence of the intelligent physicians, and a few American families, have made some improvement in these matters; but, as this branch of the profession is still in the hands of the California midwife, much ignorance and superstition still exist throughout the country to an extent that could scarcely be credited in other portions of the United States. Not deeming a more extended narration of the diseases of this vicinity as proper in a paper of this character, I have endeavored to be as brief as the nature of the subject would admit, and have, therefore, been obliged to avoid details which, after all, perhaps, would not have been read either with interest or profit.

*List of Plants found in the vicinity of Monterey, Upper California.*

[NOTE.—Assistant Surgeon W. S. King states that "this list of plants was prepared from specimens collected by himself and family, and from the collection of Dr. Andrews, an ardent and indefatigable botanist of Monterey."]

RANUNCULACEÆ :

Ranunculus Californicus.  
(undescribed).  
acris.

Aquilegia Canadensis.

Delphinium Californicum.

Menziesii.

variegatum.

nudicaule.

Pœonia Californica.

BERBERIDACEÆ :

Berberis aquifolium.

PAPAVERACEÆ :

Chryseis Californica

crocea.

caespitosa.

Platystigma lineare.

Platystemon Californicum.

CRUCIFERÆ :

Cheiranthus capitalus.

Streptanthus glandulosus.

flavescens.

CRUCIFERÆ :

Dentaria integrifolia.

Californica.

Erysimum grandiflorum.

Lepidium Californicum.

Menziesii.

latipes.

Thysanocarpus pusillus.

elegans.

Polygala (unknown).

VIOLACEÆ :

Viola longipes.

pedunculata.

ocellata.

CISTACEÆ :

Helianthemum scoparium.

FRANKENIACEÆ :

Frankenia grandiflora.

ILLECEBRACEÆ :

Paronychia ramosissima.

Spergula rubra.

CARYOPHYLLACEÆ :

Arenaria laricifolia.

Stellaria media.

Silene Drummondii.

PORTULACACEÆ :

Calandrina Menziesii.

speciosa.

Claytonia perfoliata.

tenuifolia.

GERANIACEÆ :

Erodium cicutarium.

OXALIDACEÆ :

Oxalis corniculata.

Oregana.

ANACARDIACEÆ :

Rhus diversiloba.

laurina.

MALVACEÆ :

Malva fasciculata.

rotundifolia.

HIPPOCASTANCEÆ :

Æsculus Californica.

## LIST OF PLANTS—Continued.

## RHAMNACEÆ :

*Rhamnus laurifolius*.  
*croceus*.  
*Californicus*.  
*Ceanothus thyssiflorus*.  
*cuneatus*.  
*rigidus*.  
*dentatus*.

## LEGUMINOSÆ :

*Vicia exigna*.  
*Lathyrus strictus*.  
*maritimus*.  
*palustris*.  
*Psoralea orbicularis*.  
*macrostachya*.  
*Trifolium albopurpureum*.  
*pratense*.  
*microcephalum*.  
*fimbriatum*.  
*heterodon*.  
*involutum*.  
*fucatum*.  
*amplectens*.  
*Melilotus occidentalis*.  
*Medicago denticulata*.  
*Hosackia stolonifera*.  
*gracilis*.  
*crassifolia*.  
*decumbens*.  
*tomentosa*.  
*micranthus*.  
*scoparia*.  
*sericea*.  
*nudiflora*.  
*strigosa*.  
*rubella*.

*Astragalus leucophyllus*.

*Phaca trichopoda*.  
*densiflora*.  
*Douglasii*.

*Lupinus Menziesii*.  
*microcarpus*.  
*hirsutissimus*.  
*gracilis*.  
*manus*.  
*leptophyllus*.  
*truncatus*.  
*bicolor*.  
*polyphyllus*.  
*cytisoides*.  
*versicolor*.  
*rivularis*.  
*Douglasii*.  
*macrocarpus*.

*Thermopsis macrophylla*.  
*Pickeringia montana*.

## ROSACEÆ :

*Nuttallia cerasiformis*.  
*Spiræa aræfolia*.  
*Cercocarpus parvifolius*.

## ROSACEÆ :

*Acæna pinnatifida*.  
*Adenostoma fasciculata*.  
*Horkelia Californica*.  
*cuneata*.  
*Potentilla glandulosa*.  
*Fragaria vesca*.  
*Chilensis*.  
*Rubus velutinus*.  
*strigosus*.  
*spectabilis*.  
*villosus*.  
*ursinus*.  
*fraxinifolia*.  
*Photinia arbutifolia*.

## ONAGRACEÆ :

*Zauschneria Californica*.  
*Epilobium coloratum*.  
*Oenothera Hookeri*.  
*Lindleyi*.  
*rubicunda*.  
*riminea*.  
*Arnottii*.  
*tenella*.  
*purpurea*.  
*lepida*.  
*cheiranthifolia*.  
*micrantha*.  
*dentata*.

*Eulobus Californicus*.

*Clarkia elegans*.

## CUCURBITACEÆ :

*Echinocystis* (undescribed).

## GROSSULACEÆ :

*Ribes speciosum*.  
*Menziesii*.  
*villosum*.  
*Californicum*.  
*glutinosum*.  
*malvacum*.

## CACTACEÆ :

*Opuntia vulgaris*.

## MESEMBRYANTHEMACEÆ :

*Mesembryanthemum trigonacarinatifolium*.

## SAXIFRAGACEÆ :

*Saxifraga*—3 species.  
*Henckera hirtiflora*.  
*Lithophragma cymbalaria*.

## UMBELLIFERÆ :

*Hydrocotyle natans*.  
*Sanicula Menziesii*.  
*nudicaulis*.  
*arctopoides*.

*Cryptotænia* (unknown).

*Peucedannia carnifolium*.

*Leptotænia Californica*.

*Dancus pusillus*.

## CORNACEÆ :

*Cornus sericea*.

## CAPRIFOLIACEÆ :

*Symphoricarpus racemosus*.  
*Lonicera Californica*.  
*involuta*.  
*Sambucus* (unknown).

## RUBIACEÆ :

*Galium Californicum*.  
*trichocarpum*.  
*triflorum*.

## COMPOSITE :

*Corethrogyne filaginifolia*.  
*tomentella*.  
*Aster Chilensis*, and several unknown species.  
*Erigeron glaucum*.  
*speciosum*.  
*Douglasii*.  
*Gutierrezia Californica*.  
*Solidago spiciformis*.  
*Californica*.  
*elongata*.  
*Ericameria microphylla*.  
*Aplopappus Menziesii*.  
*Grindelia hirsutula*.  
*robusta*.  
*Heterosheca grandiflora*.  
*Chrysopsis sessiliflora*.  
*Baccharis pilularis*.  
*Douglasii*.  
*viminea*.  
*Micropus Californicus*.  
*Psilocarpus globiferus*.  
*Stylocline gnaphaloides*.  
*Franeria bipinnatifida*.  
*Wyethia angustifolia*.  
*Helianthus Californicus*.  
*Helianthella lanceolata*.  
*Leptosyne Douglasii*.  
*Choenactis tennifolia*.  
*Bahia achillæoides*.  
*Lasthenia glaberrima*.  
*Burrielia microglossa*.  
*Dichæta uliginosa*.  
*Layia gaillardoides*.  
*heterotricha*.  
*Callichroa plataglossa*.  
*Hemizonia filipes*.  
*Venegesia carpesioides*.  
*Artemesia pycnocephala*.  
*pachystachya*.  
*Californica*.  
*Gnaphalium Californicum*.  
*Sprengelii*.  
*Senecio Californicus*.  
*Douglasii*.  
*Calais Douglasii*.  
*Malacothrix commutata*.  
*Taraxacum dens leonis*.  
 (unknown).  
*Sonchus asper*.



## LIST OF PLANTS—Continued.

LABIATE :	MISCELLANEOUS :	MISCELLANEOUS :
Scutellaria.	Sisyrinchium.	Convallaria—2 species.
Stachys.	Solanum.	Convolvulus—3 species.
Galeopsis.	Vaccinium (evergreen).	Dodecatheon.
Gerardia.	Iris 2 species.	Castanea (evergreen).
Pycnanthemum.	Mimulus.	—
Collinsia—2 species.	Myosotis.	TREES.
RHINANTHACEÆ :	Plantago.	Pinus insignis.
Euchroma.	Achillea millefolium.	Edgariana.
Pedicularis.	Allium—several species.	Cupressus macrocarpus.
Castilleja—several species.	Anagallis.	Quercus Californicus,
MELANTHACEÆ :	Arbutus tomentosa.	longiglanda.
Zygadenus.	Asclepias.	Salix—several species.
Helonias.	Calochortus.	Arbutus procera.
	Chenopodium.	Taxodium sempervirens.

*List of animals, &c., found at Monterey, California, and vicinity.*—California lion, black and brown bear, tiger cat, wild cat, lynx, prairie wolf, coyote, badger, rabbit, hare, greysquirrel, mole, wood rat, house rat, pole-cat, weasel, chameleon, elk, white-tail deer, antelope, sea otter, seals.

*Reptiles.*—Bufo Americanus, rana, hyla and hylodes, turtles, lizards, rattle and other snakes.

*Birds.*—White and grey goose, ducks, large and small crow, pigeon, woodcock, snipe, wood-lark, woodpecker, large and small hawk, eagle (bald), quail, blackbird, sparrow, bluebird, martin, barn swallow, humming-bird, chapparral cock, kildeer, linnet, crane, robin, fish-hawk, large and small owls, turkey-buzzard, ibis, and red-winged blackbird.

## FORT MILLER.

Fort Miller is located upon the San Joaquin river, and just within the foot-hills of the great Sierras; these soon disappear upon the vast plains, which stretch north and south to the distance of several hundred miles, and are in width about fifty. Save a few narrow belts which mark the course of the several rivers, the plains are entirely destitute of timber, and oppose no obstacles to the burning rays which through several months unintermittingly pour down from a relentless sun. The wind which sweeps from the ocean to restore the equilibrium, chills in its passage the inhabitants of the coast; yet, when it has traversed these plains, so hot and dry does it become, it is almost irrespirable. The light winds from the snowy summits of the Sierra secure cool nights. The country adjacent to the post is only remarkable for its occasional gold-bearing quartz veins. The soil, both upon the hills and in the valley, is universally of an argillaceous character, with vast quantities of pebbles thickly imbedded therein. A few scattered oaks, and some straggling pines, are the principal trees in the immediate vicinity.

The following remarks, respecting the diseases at this post, are taken from a recent report by Assistant Surgeon Murray: "Diarrhœa, which, next to remittent fever of a mild form, is most frequently met with, seems to be produced by the great heat and sudden changes of temperature, together with faulty diet. Vegetables are frequently very scarce; for the torrid heat which sets in early in June, nearly puts an end to vegetation, save in the low and moist river bottoms, of which there are none within twenty-five miles of the post. Several cases of scorbutic diarrhœa have been treated with the happiest results with the supertartrate of potassa in small doses long continued. It is remarkable that diseases of the liver and bowels are not more frequent during the hot months here, where the thermometer, for three or four months, ranges from 90 to 115° at mid-day. The small quantity of oxygen inspired with this rarified atmosphere, is insufficient to decarbonize the blood; and thus additional labor is thrown upon the liver; and, at this season, it is a fact, universally noticed, that the stools are perfectly black in the most healthy individuals."

## DISEASES.

The only epidemic with which the troops in southern California have been visited is one of influenza, which occurred in February, 1853, and which was confined to the garrison of Fort Yuma. The disease was ushered in with severe symptoms and marked prostration; but, on the second or third day it assumed a mild form. Assistant Surgeon Milhau, who notes this epidemic, remarks that, "in some cases dysentery was a prominent symptom, appearing on the first, and subsiding on the second or third day, giving place to the ordinary catarrhal symptoms, so that it would appear the two diseases were produced by the same cause; in one, the mucous membrane of the intestinal canal being affected; in the other, that of the air-passages." The usual duration of the disease was four or five days.

The diseases of the troops in this region are presented in the following table, compiled from the consolidated abstract:

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	1,744	733	8	420	4.5
Second quarter.....	1,843	1,029	7	558	4
Third quarter.....	1,591	847	10	532	6.2
Fourth quarter.....	1,650	591	5	358	3
Annual ratio.....	1,707	3,200	30	1,874	17.5

The annual proportion of cases of disease to the number of officers and men was 1.87 to 1, and the corresponding ratio of deaths, 1 to 56.9, or 1.7 per cent. The proportion of deaths to cases treated was 1 to 106.66, or 0.93 per cent.

## FEVERS.

Quarters. ....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	1,744		1,843		1,591		1,650		1,707			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris continua communis.....	5	1	2	0	5	0	2	0	14	1	1 in 14	8.2
Febris intermittens quotidiana..	44	0	50	0	57	0	26	0	177	0	0 in 177	103
Febris intermittens tertiana....	25	0	33	0	17	0	10	0	85	0	0 in 85	49
Febris intermittens quartana...	3	0	0	0	0	0	2	0	5	0	0 in 5	3
Febris remittens .....	13	0	6	0	21	0	4	0	44	0	0 in 44	26.3
Febris typhus. ....	0	0	1	0	0	1	0	0	1	1	1 in 1	0.6
Febris typhus icterodes.....	0	0	0	0	0	0	0	0	0	0	0 in 0	0
Total .....	90	1	92	0	100	1	44	0	326	2	1 in 163	190



## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength -----	1,744		1,843		1,591		1,650		1,707				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Cholera Asiatica -----	0	0	0	0	0	0	0	0	0	0	0	0	0
Diarrhœa -----	67	3	162	2	120	1	99	2	448	8	1 in 56	262	
Dysentery acuta -----	26	0	40	0	13	0	7	0	86	0	0 in 86	50.3	
Dysentery chronica -----	4	0	0	0	1	0	3	0	8	0	0 in 8	4.6	
Enteritis -----	0	0	0	0	0	0	0	0	0	0	0 in 0	0	
Hepatitis acuta -----	1	0	0	0	1	0	0	0	2	0	0 in 0	1.1	
Hepatitis chronica -----	0	0	0	0	1	0	0	0	1	0	0 in 1	0.6	
Obstipatio -----	22	0	43	0	39	0	17	0	121	0	0 in 121	70.8	
All other diseases of this system -----	20	0	47	1	39	0	24	0	130	1	1 in 130	76	
Total -----	140	3	292	3	214	1	150	2	796	9	1 in 88	466	

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength -----	1,744		1,843		1,591		1,650		1,707				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Bronchitis acuta et chronica..	3	0	2	0	3	0	3	0	11	0	0 in 11	6.4	
Catarrhus -----	101	0	85	0	47	0	41	0	274	0	0 in 274	160	
Phthisis pulmonalis.....	7	1	0	1	1	1	1	2	9	5	1 in 2	5.2	
Pleuritis -----	5	0	10	0	5	0	3	0	23	0	0 in 23	13.4	
Pneumonia -----	2	1	7	0	0	1	4	0	13	2	1 in 6	7.6	
All other diseases of this system -----	4	0	3	0	1	0	2	0	10	0	0 in 10	5.8	
Total -----	122	2	107	1	54	2	54	2	340	7	1 in 49	199	
Rheumatismus -----	53	2	41	0	24	0	44	0	162	2	1 in 81	94	

## CALIFORNIA—NORTHERN DIVISION.

THE troops in the northern division of California have more or less permanently occupied the following stations: Presidio of San Francisco, Benecia Barracks, Sonoma, Camp Far West, Forts Reading, Jones, and Humboldt.

## PRESIDIO OF SAN FRANCISCO AND SONOMA.

The post at the Presidio of San Francisco is located on an elevated point three miles west of the city toward the coast, and much more directly exposed to the sea. The entrance to San Francisco harbor bounds the point on the north.

SONOMA.—This post is on a small stream entering into San Pablo bay, near forty miles north of San Francisco. The locality is partially protected from the sea exposure by spurs of the Coast range of mountains, and its character in this respect is intermediate between the posts of the coast and those of the interior of California.

MEDICAL TOPOGRAPHY AND DISEASES OF BENECIA BARRACKS.

By Assistant Surgeon John S. Griffin : 1852.

The post of Benecia is situated in latitude  $38^{\circ} 8'$  north, and  $122^{\circ} 4'$  west, on the straits of Carquenez, connecting the bays of San Pablo and Suisun, about thirty miles east, in a direct line from the Pacific ocean, and about one mile east of the town of Benecia; altitude of barometer above the Pacific ocean sixty-four feet.

The bays in the vicinity of the post are surrounded by extensive marshes, which are flooded at high tide. In the spring and summer seasons, when the San Joaquin and Sacramento rivers are full, the water in the straits is sufficiently fresh to be used for drinking.

To the north and northwest, the post is surrounded by high hills and valleys, of great fertility; there are no trees in the vicinity of the post; on the opposite side of the straits there are a few groves of small oak—a species of live-oak.

The soil is a yellow clay, over strata of slate and limestone. Coal, gold, and mercury have been found within a few miles of this place. The country for many miles presents the same aspect, except that in the vicinity of Sonoma and Napa the hills are higher; there are many thermal springs in the valleys. The hills are covered with a most luxuriant growth of wild oat, and the valleys with clover; the oat ripens about the 10th or 15th of June.

The wild animals found in the vicinity are the grizzly bear, elk, deer, antelope, and hare; the plains and valleys, during the rainy season, are covered with flocks of wild geese, brent, duck, and other water-fowl; they commence coming about the middle of October, and migrate north in March or April.

The climate is mild, divided into two seasons—the wet and dry. The winter, or wet season, usually commences in November, and continues through March. A few weeks after the first rains, the grass springs up, and in a short time the country presents the appearance of spring. The fruit trees bloom in February and March: the vine and olive grow in great perfection. Snow seldom falls on the plains; occasionally the higher hills are covered for a few hours; ice sometimes, but rarely forms; the hills and valleys continue green until the last of May, when the oat and other grasses begin to ripen and turn yellow; and, by the middle of July, the ground is baked and cracked, and the whole country presents the appearance of the greatest aridity. At this place, and other points near the coast, the sea-breeze blows regularly, commencing about 9 or 10 A. M., and continuing till sundown; the nights are cool and pleasant; places situated immediately on the bay and coast are subject to high winds and fogs; but near the hills and mountain ranges the climate varies greatly at points only a few miles apart—those places which are sheltered from the wind being much warmer.

This post was established April 30, 1849; and in the autumn of that year, the troops occupied temporary quarters: last spring, the barracks were finished, and occupied by the troops: these buildings are situated on a hill, to the north of the old encampment; there are sufficient quarters for four full companies.

The most prevalent diseases at this post are fevers and affections of the respiratory and digestive organs. The majority of cases of fever may be traced to field-service, in the valleys of the San Joaquin and Sacramento. Every summer, since the establishment of the post, some of the troops of the garrison have been engaged in field-service in the upper country: the men have invariably returned (particularly from the Sacramento valley) prostrated by fevers, dysentery, and scurvy; the fevers are not severe, the remittent form being mild and easily managed; the intermittent is apt to return frequently, and continue for a long time.

The diseases of the respiratory organs are generally mild catarrhs, usually cured in a few



days; but one man has died at this post with phthisis; and I can find but two cases reported since the establishment of the post.

The diseases of the digestive organs are diarrhœa and dysentery, both frequently proving extremely obstinate and difficult of cure.

Persons arriving here are subject to attacks of catarrh and diarrhœa. This, I think, may be ascribed to the cold winds which prevail here, and to the water, which is highly impregnated with salts of magnesia and lime. Since the new barracks have been finished, cistern water is used by the troops.

The worst and most obstinate cases of disease of the digestive organs are met with among old soldiers—men who have served in Mexico and in this country for several years. This is the chronic diarrhœa, or dysentery; it is generally combined with scorbutus. Upon examination, the gums will be found to be swollen—bleeding easily; the breath fœtid; the tongue smooth and shining, and frequently aphthous ulcerations on the edges. I have not seen many cases attended with eruptions. The passages are frequent and changeable; being, at times, almost natural; changing, without any apparent cause, to watery yellow passages, or to mucus and blood. The appetite is capricious. The general appearance of the patient is anæmic. Recovery is slow—dependent more on diet than medicine. I have known several persons to recover in a very short time by a voyage to the Sandwich Islands.

Since the establishment of this post, fourteen deaths have occurred: eleven were from chronic diarrhœa and scorbutus, one cystitis, one phthisis, and one suicide. Four have been discharged for disability: one mania, one angina pectoris, one circocele, and one debility. I think that the diseases may be attributed to diet and habits of dissipation. From the high price and scarcity of vegetables, the men have been confined almost entirely to the ration and fresh beef; and this has been particularly the case when in the field. In 1849 and 1850, diarrhœa and scurvy were prevalent among the citizens employed by the quartermaster, and persons in the surrounding country. At this time, persons living at the post, and the inhabitants of the surrounding country who have an abundance of vegetables, are remarkably healthy.

Ophthalmia is a frequent disease at this post, caused, I think, from dust and high winds.

#### CAMP FAR WEST.

Camp Far West is situated at the base of the foot-hills of the Sierra Nevada, at the head of the valley of Bears' creek, a tributary of Feather river, and on the eastern side of the Sacramento valley. The camp is about 35 miles N.N.E. of Sutter's Fort, in latitude  $39^{\circ} 7'$ , longitude  $121^{\circ} 18'$ . The soil of Bears' Creek valley, which is from one to two miles wide, and fifteen miles long, is alluvial; and, except some few sloughs and lagoons of trifling extent, it is in most seasons dry. The table-land, which composes the main Sacramento valley, and extends from the Sierra Nevada to the coast range intersected by the alluvial valleys of the Sacramento, Feather, Yuba, and American rivers, with other minor streams, is generally composed of a mixture of clay and gravel, with a substratum of indurated claystone, impervious to water, for which reason the plains are impassable in the rainy season. In common with the whole Sacramento valley, this post is very sickly from June till October. Although there are no marshes within twenty-five miles of the post, it is considered one of the most unhealthy points in the valley. The climate is mild and pleasant from October to May; the rest of the year it is hot and sultry. (*From quarterly report of Assistant Surgeon Robert Murray: 1849.*)

This post was abandoned on account of its unhealthiness; and the troops moved to the upper or northern part of the valley of the Sacramento, where they established a new post, which was named Fort Reading.

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT READING.

By Assistant Surgeon John F. Hammond: 1855.

This military post was established in May, 1852, and was named Fort Reading, after an old settler from one of the eastern States, who still lives in the neighborhood.

It is in latitude  $40^{\circ} 28' 22''$  N.; longitude  $122^{\circ} 7'$  W. from Greenwich. In altitude about 800 feet above the level of the sea. The country around is, in a general view, an irregular prairie, bounded on the east by a range of mountains—Lassen's mountains—running north and south, sixty miles distant, and one-fourth of the way to the range of the Sierra Nevada; on the west by the Coast range, twenty-five miles distant; on the north by Shasta butte, ninety miles distant, which appears to spread out east and west and connect with Lassen's and the Coast range; and on the south it is continuous with a plain that follows the course of the Sacramento river. The average height of these mountains is five or six thousand feet above the sea. The highest point of Lassen's range—Lassen's butte—which is nearly due east from the fort, must be near 10,000 feet above the sea. Snow is seen on it at all seasons. Shasta butte, which is immediately under the 122d parallel, is, according to the most reliable map of California, 16,600 feet above the sea. It is covered perpetually with snow for some distance below its summit. Three-fourths of the horizon is in winter bounded by a line of snow.

This large basin is the northern part of the valley of the Sacramento river. Its inclination is to the south. It is furrowed everywhere by ravines and valleys, in which, from October to May, are flowing mountain torrents. The last vary in size from the smallest to a quarter of a mile broad, and have an average depth of many feet. The remainder of the year the ravines contain strings of pools of stagnant water, alternating with sandy or rocky beds, exposed to the rays of the sun. The prairie is studded here and there with mounds of white oak; and white oak, the nut pine, and willows, with long grass and dense undergrowth, skirt the water-courses. Elsewhere the country is bare of everything that would intercept the winds. The population, which is composed of emigrants and a few small bands of roving Indians, is, except in the mines, very sparse. The cultivation of the soil is of such little extent that it cannot affect in any degree its healthfulness.

The post is a mile east of the Sacramento river, in the valley of a mountain stream called Cow creek. It is on the brink of the bank, twenty feet high, which limits the bed of the creek on its western side, in a fine grove of large white oaks entirely free from undergrowth. The quarters for the officers and men are of adobes, one story high, of ample dimensions, well ventilated, except beneath the floors, which are of planks laid directly on the ground; they are well lighted, and the distance between the buildings spacious, so as to allow free access and circulation of fresh air. The whole is thoroughly policed. The creek, generally confined between its banks, sometimes overflows just above the fort, and forms a stream fifteen yards or more in width, that runs between the buildings occupied as quarters, and leaves a bed damp and fetid. It was found necessary to build a permanent bridge over the bed of this cut-off, for such an emergency. During the winter and spring the creek has, for a mile or two above its mouth, an average depth of fifteen feet, and forty yards breadth. Its bed, however, will average one hundred yards wide. Just now, the stream is at the fort 350 yards wide. In the summer and fall the average depth is not more than four feet; its breadth is contracted two-thirds, and much of its bed, which consists of boulders, gravel and sand, or argillo-arenaceous layers containing a large amount of fragments and particles of pumice, and vegetable remains, is exposed to the sun. When the stream is swollen by the rains it has a yellowish grey turbidness, but the deposit is slight, from the short duration of the floods and its rapid current; as it subsides it has the opalescent hue of streams of limestone water, and when at its summer height it is limpid, and delicious to drink. Its course is S.S.W. It runs a little nearest the eastern border of its valley, and empties into the Sacramento river a mile below the fort.

The valley of the creek is a mile wide. Its bottom is a plain of argillaceous soil mixed with gravel and vegetable remains from grasses and weeds. It produces a very full crop of grasses and weeds, and a great variety of flowers. It is exceedingly retentive of moisture, and is, during the rainy season, so boggy that it is dangerous for cattle to get off the roads. The sub-soil is a light-yellow sand, more or less compact. The valley has the appearance of a valley from disruption, and presents on both sides abrupt escarpments fifty feet high. The continuity of the latter is much interrupted by ravines formed by the rains, and the angles have been



rounded, and the subsoil concealed by various meteorological causes. From the tops of the escarpments on both sides of the valley, extend plains to the foot of other precipices, or are interrupted by ravines and valleys. The surface of these plains are red clay mixed with gravel and the remains of crops of grass, and they are covered with rolled flints. In some places, over an extensive tract, they are formed into numerous depressions, which contain puddles or ponds of water during the rainy season. For some time after that season, even a man cannot walk on them without miring. In summer they are dry and somewhat spongy, and water is found a short distance beneath the surface. The substrata are clay, mixed with rolled flints, gravel, yellow sand, all of various degrees of compactness, but friable, extending to an indefinite depth. Cryptogamic plants are observed during most of the year. After a rain many mushrooms spring up; mould fixes on the ground in numerous places, and seizes upon all fresh deposits of animal or vegetable matter.\*

Of the sources to which have been referred the causes of intermittent fever, several are well marked here. For example: an argillaceous soil converted into a swamp during one half the year, and presenting during the other half a dry spongy surface, with water at a little depth beneath it; a prolonged rainy season followed by one of dryness and intense solar heat; numerous beds of streams exposing dry surface or pools of stagnant water to the sun, especially one immediately beside us; the free passage of the winds in various directions; the great diurnal range of the temperature; the general growth of cryptogamic plants; and the grove immediately around us, the exhalations from which may chill the atmosphere at night, or shed down poisonous emanations intercepted by the leaves.

The intermittent fever occurs here at all seasons. A violent attack of tertian intermittent occurred in an officer late in December last, just after fifteen successive mornings of white frost. A light shower followed the last frost, which was, in turn, followed by four frosty mornings, and on the second day of the last he was attacked. He arrived here for the first time seventeen days before his illness, and there is no reason to believe that he had contracted the disease elsewhere. The disease is perfectly controllable by the sulphate of quinine.

In point of climate and salubrity, the description of this part of the country is applicable to much of the country lying between the range of the Sierra Nevada mountains and the Coast range.

The tribes to which the Indians who rove about here belong are not distinguishable by our present mode of communicating with them. They consist of a few small bands, speaking different languages, and each known specifically by the name of its chief. They are all classed under the term "Digger," and are further arranged according to the names of the streams which are severally their usual haunts. They will average about the medium size of white men, and are well proportioned. The head is not below the medium size, and is not deficient in local developments. The superciliary ridge projecting unusually gives the forehead the appearance of retreating more than it would otherwise have. The eyes are not oblique, and the powers of vision are very extraordinary. The cheek-bones are high. The nose regularly arched, not long; the *alae nasi* spread out less than in the African; the orifices present downward. The teeth are regular, white, not large. The lips are thicker than in the European. The inferior maxillary bone is not at all disproportioned to the rest of the face. The chest is well developed. The abdomen is protuberant. The hands and feet are remarkably small. Their general expression, when not hungry, is that of happiness and benevolence. At other times, they are pensive, grave, subdued, and seemingly wretched. They are armed with the bow, made elastic by a layer of some animal fibrous tissue on its back, and the wooden arrow pointed with flint. They live on small game, fish, insects, acorns, roots, and grass. They dwell in small round-top huts made of dirt supported by skins and branches of trees. Among themselves and between the different bands exists a remarkable charity; when starving with hunger, they will divide the last morsel of food with all to whom they can have access. The men go naked, the women

\* The original report contains an extended series of meteorological tables, which are here necessarily excluded.—C.

wear an apron of twisted grass. When not aggressed upon they are harmless. Poor creatures! They are fast disappearing before the strides of the white man; even his cattle rob them of their sustenance.\*

#### FORT JONES,

In Scott's valley, between the Salmon and Siskiyou range of mountains, and distant one hundred miles northwest from the head of the Sacramento valley, from which it is approached by a trail over the mountains passable for mules only. Scott's river, a small stream, runs through the valley its entire length from south to north, and empties into the Kalamath. The valley itself is about thirty miles long by ten broad. The fort is in latitude  $41^{\circ} 36'$ , longitude  $122^{\circ} 52'$ , and has an elevation of 2,570 feet above the sea. (*From quarterly report of Assistant Surgeon Charles H. Crane: 1852.*)

#### FORT HUMBOLDT,

At the village of Bucksport, Humboldt bay, coast of California. The fort is situated upon a handsome plateau, some fifty feet high, and about a quarter of a mile back from the shore of the bay. Its exposure is entirely open to the westward, commanding a fine view of the Pacific, about two miles distant. There is an abundance of good water and fine lumber. A salt marsh of considerable extent lies toward the north, but does not affect the healthiness of the place. The climate, though a little cooler, is, in other respects, very much like that of San Francisco; strong cool breezes from the northwest in summer, with occasional fogs in the morning. (*From quarterly report of Assistant Surgeon C. P. Deyerle.*)

### DISEASES.

Having considered the general topographical features of the several posts, we proceed to present the statistics of disease in the order heretofore followed:

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	1,518	986	11	650	7.2
Second quarter.....	1,474	1,220	10	828	6.7
Third quarter.....	1,699	1,896	97	1,116	57
Fourth quarter.....	1,706	1,478	32	866	18.7
Annual ratio.....	1,599	5,580	150	3,489	93.7
Exclusive of cholera.....		5,420	70	3,389	43.7

\* Assistant Surgeon John Campbell reports that in September, 1853, a company of infantry left this post for duty in the field, but the men were so debilitated by their residence in that locality, and by frequent attacks of intermittent fever, that they were unable to proceed to the seat of Indian difficulties, and had to halt thirty miles from the fort. A comparison of the statistics of diseases at Fort Reading with the abstract for all the posts in northern California, show that *one-half* of the entire number of cases of intermittent fever reported, occurred at this one place. This fort was abandoned on account of its unhealthiness, in March, 1856 —C.



The annual proportion of cases of disease to the mean strength of the command in this region was 3.48 to 1, and the ratio of deaths 1 to 10.66 or 9.3 per cent. The proportion of deaths to cases of disease was 1 to 37.20 or 2.68 per cent. Exclusive of cholera the ratio of disease to number of troops was 3.38 to 1; of deaths, 1 in 22.84 or 4.3 per cent.; and the proportion of deaths to cases treated, 1 to 77.42 or 1.29 per cent.

## FEVERS.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	1,518		1,474		1,699		1,706		1,599			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris continua communis.---	2	0	3	0	18	0	2	0	25	0	0 in 25	15.6
Febris intermittens quotidiana	181	0	229	0	566	0	387	1	1363	1	1 in 1363	852
Febris intermittens tertiana .	89	0	115	0	150	0	142	0	496	0	0 in 496	310
Febris intermittens quartana.	7	0	1	0	1	0	2	0	11	0	0 in 11	7
Febris remittens -----	45	0	32	1	71	1	91	0	239	2	1 in 119	149
Febris typhus-----	2	1	0	0	23	10	8	5	33	16	1 in 2	20.6
Febris typhus icterodes.---	0	0	0	0	0	0	0	0	0	0	0 in 0	
Total -----	326	1	380	1	829	11	632	6	2167	19	1 in 114	1355

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters -----	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	1,518		1,474		1,699		1,706		1,599			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Cholera Asiatica.-----	0	0	0	0	160	80	0	0	160	80	1 in 2	
Diarrhoea.-----	88	3	118	1	351	1	131	5	688	10	1 in 68	425
Dysentery acuta -----	5	0	36	1	53	0	46	1	140	2	1 in 70	86
Dysentery chronica.-----	3	1	9	0	1	1	1	5	14	7	1 in 2	8.7
Enteritis -----	0	0	0	0	0	0	0	0	0	0	0 in 0	0
Hepatitis acuta -----	2	0	1	0	0	0	3	0	6	0	0 in 6	3.7
Hepatitis chronica.-----	0	0	0	0	0	0	1	0	1	0	0 in 1	0.6
Obstipatio -----	29	0	31	0	72	0	21	0	153	0	0 in 153	95
All other diseases of this system -----	11	0	36	0	51	1	32	1	130	2	1 in 65	81
Total -----	138	4	231	2	688	83	235	12	1292	101	1 in 13	808
Exclusive of cholera.-----									1132	21	1 in 54	708

*Cholera.*—Although this disease did not occur among the troops actually stationed in northern California, yet, as it had prevailed in that region within the period embraced in this report, it was determined to give the statistics of an epidemic which proved very destructive to the 4th

regiment of infantry while en route to San Francisco from New York in the summer of 1853. The particulars are given in the following report by Surgeon Charles S. Tripler:

SAN FRANCISCO, CALIFORNIA, *September 14, 1852.*

SIR: The occurrence of malignant cholera in the 4th regiment of infantry, which I accompanied from New York to California, seemed to me to require that I should make a special report to you upon the subject. I have, therefore, made a report of the sick of that regiment up to the 31st August, and beg leave to accompany it with the following remarks:

The regiment was concentrated at Fort Columbus, New York, in obedience to orders from the War Department; the last company having arrived on the 23d June. On that day 243 recruits were received and examined. On the evening of the 2d July, a telegraphic order was received for the troops to embark on the 5th. On the evening of the 3d July about 150 more recruits were received and examined. On the 5th July eight companies of the regiment, with the band and headquarters, were embarked on the United States mail steamer Ohio, bound for Aspinwall, New Granada. We had a good deal of diarrhœa among our men, during their stay upon Governor's Island; but it was quite manageable, and, when we embarked, I did not consider it necessary to leave but one man in the hospital; he was recovering from a broken leg, and would not have been able to march across the isthmus. The Ohio was a large ship, as to tonnage, and, in that respect, capable of carrying our whole command; but her room is so badly distributed, that we should have been crowded had there been no other passengers. Our command, including women and children, was about 800. We had, however, all told, passengers, crew, &c., 1,100 on board. This was altogether too many people for her accommodations at that season of the year, and in a voyage to the tropics. We, however, reached Aspinwall on the 16th July, without losing a man. We had a number of cases of both diarrhœa and constipation, and a few cases of fever on the voyage. Our sick report, nevertheless, was very small upon landing. One man (the band master,) sick with chronic diarrhœa, had sunk so much on the voyage I was obliged to leave him on the ship, where he died two days afterwards.

On the voyage, I had endeavored to impress upon the commanding officer the necessity of preventing the men from eating the fruits of the country, and from indulging in any of the liquors they would meet with on the march. A very judicious order, embracing these views, was issued previous to our debarkation. I am sorry to say, however, it was not observed on the march. Had it been strictly obeyed, I think we should have been spared much suffering. It being the height of the rainy season when we reached the isthmus, we were much embarrassed by the state of the roads; by rains every day; by the extreme heat, and by the epidemic influences prevailing. Cholera existed at Aspinwall when we landed. It had been very fatal, a short time previously, among the laborers on the railroad, in consequence of which they had very generally abandoned the work. Forty laborers out of one hundred, I was told, had died at one station. It was existing at both Cruces and Gorgona on the route—points we were obliged to pass—and at both which we were unfortunately detained. We found it, also, at Panama upon our arrival there. Notwithstanding all this, and the cautions in the order of march, the men had no sooner been permitted to land to procure water, than numbers of them sought the first tavern they could find, to indulge their fatal craving for liquor. Many were brought back on board that night intoxicated and drenched with rain. Fruits were also eaten with avidity, whenever they could be procured.

As we did not reach Aspinwall until after the departure of the daily train of cars, we were obliged to remain there until next morning. Our baggage, however, was principally landed, and stowed in the cars that afternoon, and this operation was completed early the next morning. When the hour arrived for starting, it was found that the locomotives were too light to carry more than half our men in one train. They were accordingly despatched in two trains at intervals of an hour, and then the baggage had to be left to be brought up by a return engine. Arrived at Barbacoas, the present terminus of the railway, Colonel Bonneville informed me



that it was determined to march the main body of the men from Gorgona to Panama; that the sick, the women, the baggage, and one company would proceed to Cruces, where the mule transportation would be provided, and whence they would also proceed to Panama. I was ordered to accompany this last detachment. Colonel Bonneville then proceeded at once, in boats, to Gorgona. Colonel Wright was to follow when the baggage came up. The baggage did not arrive till after dark, too late to transfer it to the boats. In the morning it was discovered that the hospital stores were not contained in those cars. I had a special messenger sent back to bring them up immediately. Colonel Wright went on with his battalion, leaving me a subaltern and a small guard, with the sick. My messenger did not return till late in the afternoon, and then brought up but four packages out of thirty, declaring there were no more to be found. This made it necessary for me to return to Aspinwall, which I did that night upon a hand car. I found my stores in the first baggage car I met with in the depot, and the next morning carried them to Barbacoas in a special train furnished me by Colonel Totten, the engineer of the road. I proceeded at once up the river to Cruces, a distance of twelve miles, against a rapid and dangerous current, in a small boat, propelled by setting-poles only; and by dint of great exertion and determination, succeeded in reaching that point at about 9½ at night. My hospital boat did not get up till next morning. At Cruces, very much to my surprise, I found the regimental quartermaster, about seventy men, and all the women and children. This was Monday night. He had been there since Sunday morning, and no transportation for the baggage had yet been furnished by the contractors. The detachment was encamped on the river, at the landing-place, and all the baggage piled up in the vicinity. At this time all were well, and my sick had entirely recovered. Transportation was promised in the morning, and I determined to push on as rapidly as possible, to overtake the main body, at that time probably at Panama. In the morning we were again disappointed in transportation. This was Tuesday, 20th July. While endeavoring to get from the contractor mules for myself and necessary stores, I was called to see a soldier, said to be ill of cramps. I found a case of malignant cholera, of the most aggravated character. The man died in six hours. Upon instituting a rigid inquiry I found that the disease was, and had been, for some time prevailing in the town; that numbers had died, and were still dying there; and that a physician had been sent there from Panama for the special purpose of treating such cases. It was of course impossible for me to leave the detachment under such circumstances. I therefore decided to remain until the men were all started, and this more especially, as I was informed from day to day by passengers from Panama, that the main body had gone on board the transport in Panama bay, and that there was no disease among them. I thought it but prudent, however, to urge the quartermaster to as speedy a movement from the place as possible; and by my advice he determined, if the requisite transportation was not furnished by the next morning, to procure it himself of any body, at any price, and require the contracting parties to pay for it. It must be observed that a sub-contractor had agreed to furnish mules for eleven cents a pound, and all this time they were in demand, for private transportation, at sixteen to twenty cents. We had the vexation of seeing hundreds of citizens forwarded, with scarcely an hour's detention, while our men were kept at the most unhealthy point of the isthmus for five days, with no adequate effort on the part of the contractors to forward us to Panama. The next morning we were no better off. Captain Grant then went into the market, and succeeded in completing a contract before night with a responsible person, for the requisite number of mules, to be ready early the next day. In the meanwhile several cases of cholera occurred, and we had four more deaths. One man convalesced from the disease, but too ill to move, I was obliged to leave in charge of the alcalde and the town physician. I recommended, under the circumstances, that the whole detachment should be furnished with mules, lest the fatigue of marching over so desperate a road should excite the disease in men predisposed to it, and they should perish, without the possibility of my aiding them, on the way. This was done, but notwithstanding every precaution on our part, three fatal cases did occur on the road.

In compliance with Capt. Grant's contract, a large number of mules, both saddle and cargo, were brought up in the morning, and despatched as fast as possible with riders and burdens, respectively; by 1 p. m., about one-half our men and nearly one-half our baggage were on the road. The usual rain then coming on, operations were necessarily suspended for the day. I must here remark, that the preservation of anything like order or organization, in the forwarding of troops or baggage on mules across the Isthmus, is altogether out of the question. The moment a rider or a cargo is placed upon a mule's back, that moment he must set out, or the muleteer strips his mule and carries him off. Our movement was, therefore, of necessity a straggling one, each man making his way to Panama as he best could, when once mounted. The next morning, before 10 o'clock, the last of our men was on the way, and most of the remaining baggage, and I then set out myself; I reached Panama before dark, but too late to go to the ship that night. I learned that she was lying off Taboga, 12 miles down the bay; that cholera had broken out on board, and carried off a number of men. A small steamer communicated with her once a day only, leaving Panama at 5 p. m. I was, therefore, detained at Panama until that hour of the following day. Here I learned that six of the cabin passengers by the Ohio (our ship) had died in Panama of cholera contracted on the Isthmus.

I proceeded to the ship by the first opportunity, and there was informed that the main body had passed three nights on the road between Gorgona and Panama, without shelter; that they were drenched by the rains every day; that the order relative to fruits and drink had been entirely disregarded, and, in consequence, several men had been attacked by cholera, and died on the way. After their arrival upon the ship, the surgeons of that and of two other ships of the same line had been constant in their attendance upon the sick, and abundance of hospital stores and medicines had been furnished by the company. That day (Saturday) the sick had been removed to a hulk anchored near, and a detail of men to nurse them, under the charge of an officer, had been sent on board by the commanding officer. I went on board the hulk and passed the night there. Several new cases were sent on board from the ship during the night. The next day, Dr. Martin, of the Columbia, kindly volunteered to take my place, and I got some sleep. I passed the next night again on board the hulk, besides frequent visits during the day. The next day I was obliged to apply to the commanding officer for assistance. It was impossible for any one to endure such an amount of physical and mental exertion any longer. We had, fortunately, among our passengers, Dr. Deal, of California, a physician of experience and intelligence, with whom a contract was made to perform the duties of an assistant surgeon on board the Golden Gate, from that time till she reached San Francisco, for the moderate sum of \$250. Had we known what was before us, we could not have secured his services for ten times the amount.

Tuesday, 27th July, the disease was evidently subsiding. No new cases had occurred during the night, and the sick were, for the most part, improving. I entertained strong hopes that, as soon as our baggage was all received, we should be in condition to prosecute our voyage. In this hope, however, we were doomed to be disappointed. In the afternoon of that day we had a heavy rain, against which many of our men were but ill protected. Upon the arrival of the small steamer in the evening, about a dozen knapsacks were received, that had been lying and moulding somewhere on the Isthmus for a long time; the men to whom they belonged seized upon them immediately with great eagerness, and opened them to get a change of clothing. I was afterwards informed that some of these men fell sick while in the act. Be this as it may, in about 20 hours afterward they were all taken ill of cholera in its worst form, and within an hour of each other, and most of them died. The disease having thus reappeared, it was determined to land the troops. There being shelter for the sick upon the island of Flamingo, about six miles from Panama, the debarkation was effected upon the 29th; the sick were placed in huts, and the well in a few tents and under sails stretched over poles. On the 1st August, Brevet Major Gore was attacked, and died on board the Golden Gate. His was the last case of cholera that occurred, and he the only officer we lost. I recommended to Colonel



Bonneville to destroy any other knapsacks that might be received from the isthmus, and to have the ship fumigated with chlorine; which was done. Several other officers were threatened, but, by timely means, escaped a decided attack. Upon the island, a number of those previously ill died, but no new cases appeared. The fever of the country, however, began to show itself, which made all anxious to leave Panama as soon as possible. On the 3d August, the *Golden Gate* determined to go to sea the next day, but refused to take on board more than 450 of our people, and expressly declared she would not receive a single sick man. To this extraordinary demand we were forced to submit, and I was accordingly ordered to remain on the island with the sick, most of the women and children, and one company of troops to act as nurses, &c., until the next steamer should sail. I approved of the proposal to divide the command between two ships, but could not agree as to the propriety of leaving all the sick for another steamer, as a similar objection would, probably, be made to their reception on board of her. I was, however, overruled, and on the 4th August, the *Golden Gate* sailed with 450 well men, Dr. Deal acting assistant surgeon. The three months' supply for the regiment being stowed away in the hold of the ship, I placed it in charge of Dr. Deal, with the packer's list, that he might use such of the medicines and stores as he should need on the voyage: the remainder to be left with the medical purveyor at Benicia. Dr. Deal was discharged at the termination of the voyage, and I have not seen him since, nor have I had any report from him. I have ascertained, however, that he had ninety cases of fever and diarrhœa on the voyage, and three deaths. These are embodied in my report. I have also learned that, not being able to find the box containing the sulphate of quinine, he had purchased two ounces at Acapulco and borrowed more of the ship, which has since been returned.

Upon the 7th of August it was announced that the steamer *Northerner* would take us on board and sail the next day. The surgeon of that ship was sent on shore to inspect our men: and although he thought there were several cases of fever that would die, still, as no infectious disease was prevailing, he made no objection to receiving them on board. Arrangements were accordingly made for embarking. The sick were to be first sent on board and accommodated before the ship should be crowded with the well. By a mistake of the agent a scow was sent to the island this evening to take us on board. In this scow our baggage was first stowed, and the sick placed upon it. In a few minutes the whole was flooded away, owing to the leaky condition of the scow. Our sick and baggage were hastily transferred to boats along side, and thus sent to the steamer. It was this accident that caused the damage to the instruments that were afterwards condemned by a board of survey.

It appeared afterwards that it was not intended we should be embarked that evening, and the consequence of the blunder was a remonstrance, on the part of the other passengers, against our sick being permitted to remain on board. After a great deal of negotiation it was finally agreed that a few of the worst cases might be left in hospital at Taboga, under the special charge of the agent of the company, he guaranteeing that every comfort and suitable medical attendance should be provided for them, and they forwarded as soon as possible. I considered it of the greatest importance that we should leave that climate, as our well men were daily sickening with the fever. Accordingly, four men were selected, to be left, by the ship's surgeon, which satisfied the passengers, and on the 8th of August we embarked the remainder and put to sea.

We arrived at Benicia on the 26th of August, having lost but one man on the voyage. He died of the secondary fever of cholera. Upon my arrival at Benicia I found a large sick-report from among the men shipped on the *Golden Gate*. They were ill of diarrhœa, dysentery, and typhoid fever. The men were destitute of clothing, and were in tents, exposed to intense heat by day and to very cold nights. By the advice of Assistant Surgeon Griffin they were ordered from the tents into some new cavalry stables just finished, and with marked good effect. The character of the fever was decidedly typhoid, and the dysenteries generally assumed the same type.

With regard to the treatment of the cholera as it prevailed among us, I have only to say

that all the usual means were tried, and with the usual want of success. The first cases were nearly all fatal. I think the free exhibition of brandy with capsicum and chloride sodium was about as successful as anything. We found the acetas plumbi, in doses of five to ten grains, a valuable means of restraining the diarrhœa; I feel sure many cases were relieved by it that would have terminated in malignant cholera without speedy relief. Mustard and bottles of hot water with frictions of the surface externally, camphor, calomel, and quinine internally, were freely used. But, as I have already remarked, and as usually happens in severe epidemics, the chances are that the cases first attacked will die, and that the ratio of the mortality will diminish with the duration of the epidemic. In this epidemic we lost about eighty men.

Very respectfully, your obd't serv't,  
CHAS. S. TRIPLER,  
*Surgeon U. S. Army.*

Brigadier-General LAWSON,  
*Surgeon-General, Washington, D. C.*

DISEASES OF THE RESPIRATORY SYSTEM.

Quarters -----	FIRST.		SECOND		THIRD.		FOURTH		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength -----	1,518		1,474		1,699		1,706		1,599			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Bronchitis, acuta et chronica.	6	0	21	0	2	0	5	0	34	0	0 in 34	21
Catarrhus -----	116	0	91	0	23	0	112	0	342	0	0 in 342	214
Phthisis pulmonalis -----	1	1	4	1	2	0	2	2	9	4	1 in 2	5.6
Pleuritis -----	3	0	3	0	3	0	2	0	11	0	0 in 11	6.8
Pneumonia -----	5	0	1	0	0	0	1	0	7	0	0 in 7	4.4
All other diseases of this system -----	8	0	4	0	1	0	4	1	17	1	1 in 17	10.6
Total -----	139	1	124	1	31	0	126	3	420	5	1 in 84	262
Rheumatismus -----	61	0	44	0	38	0	48	0	191	0	0 in 191	120



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ABSTRACTS

OF THE

PRINCIPAL DISEASES AND DEATHS

OCCURRING AMONG THE TROOPS

IN CALIFORNIA.

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## REPORT ON THE SICKNESS AND MORTALITY

## No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	YEARS .....	FIRST QUARTER.										AGGREGATE STRENGTH.		
		1849.	1850.	1851.	1852.	1853.	1854.							
		MEAN STRENGTH.....	35.	266.	250.	534.	418.	241.	1,744.					
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
Fever	Febris continua communis.....			2		1	1	1		1		5	1	
	Febris inter. quotidiana ....	1		13		3		21		4		44		
	Febris intermittens tertiana.....			3		2		19			1	25		
	Febris intermittens quartana.....					1		2				3		
	Febris remittens.....			1				12				13		
Eruptive fevers	Febris typhus.....													
	Erysipelas.....													
	Rubella.....													
Diseases of the organs connected with the digestive system.	Varicella.....													
	Cholera Asiatica.....													
	Diarthra.....			13	1	6	1	21	1	25		67	3	
	Dysentery acuta.....					2		17		6		26		
	Dysentery chronica.....			3		1						4		
	Enteritis.....													
	Hepatitis acuta.....							1				1		
	Hepatitis chronica.....													
	Obstipatio.....	2						7		12		22		
	All other diseases.....			4		2		3		6		5	20	
Diseases of the respiratory system.	Bronchitis, acuta et chronica.....							2				3		
	Catarrhus.....	4		3				21		70		101		
	Phthisis pulmonalis.....	1								3	1	3	7	1
	Pleuritis.....					1						2	5	
	Pneumonia.....	1	1					1				2	1	
Diseases of the brain and nervous system.	All other diseases.....					1		2		1		4		
	Cephalalgia.....					1		3				4		
	Delirium tremens.....			3				3				6		
	Epilepsia.....										1	1		
	Neuralgia.....					2				1		3		
Diseases of the urinary and genital organs.	All other diseases.....					2		4		3		9		
	Gonorrhoea.....			5		2		6		1		14		
	Stricture urethrae.....					1		1				2		
	Syphilis primitiva.....			10				3				13		
	Syphilis consecutiva.....			5		2		7				14		
Diseases of the serous and exhalant vessels.	All other diseases.....			2		2		7		4		6	21	
	Ascites.....													
Diseases of the fibrous & muscular structures.	All other diseases.....													
	Peritonitis.....													
	Podagra.....													
Abscesses and ulcers....	Rheumatismus.....	5		4	2	8		23		7		53	2	
	Fistula.....							1				1		
	Phlegmon et abscessus.....			10		11		10		3		37		
	Erysipelas.....			2		2		8		2		2	16	
	Amoebosis.....			4		2		3		1		10		
Wounds and injuries....	Amputatio.....							1				1		
	Contusio.....	2		5		4		4		7		6	28	
	Fractura.....							2				1	3	
	Luxatio.....					1		1					2	
	Incisio.....			2				1		2			5	
	Sub luxatio.....			1				4		1			6	
	Vulnus incisum.....			2		1		2		5		1	11	
	Vulnus laceratum.....									6		3	9	
	Vulnus punctum.....									1			1	
	Vulnus sclopetaceum.....			3				1					4	
Miscellaneous.....	Debilitas.....							2		1		3		
	Ebrietas.....			1		1		1					3	
	Hemorrhoids.....			1				1		1			3	
	Hernia.....							3					3	
	Morbo cutis.....					1							1	
	Morbo oculi.....			2		1		5		1		1	10	
	Scorbutus.....			9		3		1		4			17	
All other diseases.....		1		11		6		26		16		7	67	
Total.....		17	1	122	3	74	1	265	2	196	1	59	733	8



CLASSES OF DISEASES.	YEARS.....	SECOND QUARTER.										AGGREGATE STRENGTH.			
		1849.		1850.		1851.		1852.		1853.		1854.			
		MEAN STRENGTH.....	247.	200.	151.	589.	387.	269.	1,243.						
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
Fevers .....	Febris continua communis .....			1						1				2	
	Febris inter. quotidiana ....	12		8		4		9		6		11		50	
	Febris intermittens tertiana.	5		3		9		13		1		2		33	
	Febris intermittens quartana														
	Febris remittens .....			2		1		1				2		6	
Eruptive fevers .....	Febris typhus .....											1		1	
	Erysipelas .....							1						1	
	Rubella .....														
Diseases of the organs connected with the digestive system.	Variola .....														
	Cholera Asiatica .....														
	Diarrhoea .....	29	1	6	1	4		70		24		25		162	2
	Dysentery acuta .....	7						32				1		40	
	Dysentery chronica .....														
Diseases of the respiratory system.	Enteritis .....														
	Hepatitis acuta .....														
	Hepatitis chronica .....														
	Obstipatio .....	11						27		3		2		43	
	All other diseases .....	12	1	3				16		12		4		47	1
Diseases of the respiratory system.	Bronchitis, acuta et chronica	1								1				2	
	Catarrhus .....	35		1		6		15		21		7		85	
	Phthisis pulmonalis .....												1		1
	Pleuritis .....	1		1		2		3		3				10	
	Pneumonia .....	1						3		3				7	
Diseases of the brain and nervous system.	All other diseases .....							2		1				3	
	Cephalalgia .....							14				1		15	
	Delirium tremens .....			1		1		1		1				4	
	Epilepsia .....							1						1	
	Neuralgia .....							3		3				6	
Diseases of the urinary and genital organs.	All other diseases .....			2				3		9				14	
	Gonorrhoea .....	15		5				7		7		3		37	
	Stricture urethrae .....									1				1	
	Syphilis primitiva .....	2		2		5		3				3		15	
	Syphilis consecutiva .....	6		1		1		4				3		15	
Diseases of the serous and exhalant vessels.	All other diseases .....	4		2				6		5		2		19	
	Ascites .....														
Diseases of the fibrous & muscular structures.	All other diseases .....							1	1					1	1
	Pernio .....														
Abscesses and ulcers .....															

## REPORT ON THE SICKNESS AND MORTALITY

## No. 1.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	YEARS.....	THIRD QUARTER.												AGGREGATE STRENGTH.	
		1849.	1850.	1851.	1852.	1853.	1854.								
		MEAN STRENGTH .....	103.	99.	192.	422.	287.	365.							1,591.
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
Fevers .....	Febris continua communis.....					4				1		5			
	Febris inter. quotidiana.....	2		8		24		9		12		57			
	Febris intermittens tertiana.....	1		4		6		3		3		17			
	Febris intermittens quartana.....														
	Febris remittens .....			1		11		2		6		21			
Eruptive fevers .....	Febris typhus .....									1		1			
	Erysipelas .....	1										1			
	Rubeola.....														
Diseases of the organs connected with the digestive system.	Varicella.....														
	Cholera Asiatica.....														
	Diarrhoea.....	11		6		4		30	1	8		61		120	1
	Dysentery acuta.....	3				1		5				4		13	
	Dysentery chronica.....									1				1	
	Enteritis.....														
	Hepatitis acuta .....							1						1	
	Hepatitis chronica .....							1						1	
	Obstipatio.....	12						14		3		10		39	
	All other diseases.....	6		5		1		7		7		13		39	
Diseases of the respiratory system.	Bronchitis, acuta et chronica.....					2						1		3	
	Catarrhus.....	10		7		7		9		1		13		47	
	Phthisis pulmonalis.....			1		1								1	1
	Pleuritis.....			1				1				3		5	
	Pneumonia.....								1						1
Diseases of the brain and nervous system.	All other diseases.....											1		1	
	Cephalalgia .....			1				10		7		1		19	
	Delirium tremens.....	1		3		1				1		1		7	
	Epilepsia .....							1	1					1	1
	Neuralgia .....			1		3		5		4				13	
Diseases of the urinary and genital organs.	All other diseases.....							2	1	1				3	1
	Gonorrhoea.....	20		5		6		2		2		15		50	
	Stricture urethrae .....			1										1	
	Syphilis primitiva.....	3		6		1				2		3		15	
	Syphilis consecutiva.....	2		3		1								6	
Diseases of the serous and exhalant vessels.	All other diseases.....	3		2		1				3		4		13	
	Ascites.....														
	All other diseases.....							3						3	
Diseases of the fibrous & muscular structures.	Pernio.....														
	Podagra.....														
	Rheumatismus.....	5		4		4		1		2		8		24	
Abscesses and ulcers.....	Fistula.....					1								1	
	Phlegmon et abscessus.....			10		3		34		8		19		74	
	Ulcus.....	3		4		1		10				3		21	
	Ambustio .....							1						1	
	Amputatio.....							1						1	
Wounds and injuries.....	Contusio.....	6		12		8		12		1		5		44	
	Fractura.....							2						2	
	Luxatio .....							1				1		2	
	Punctio.....														
	Sub-luxatio.....							1				7		8	
	Vulnus incisum.....			1		4		1		1		4		11	
	Vulnus laceratum.....							2		4				6	
	Vulnus punctum.....			1				2		2				5	
	Vulnus sclopeticum.....													1	
	Debilitas.....	1		1				11	1	2		5		20	1
Miscellaneous .....	Ebrietas.....					1				1		1		3	
	Hæmorrhoids .....	1						1		2		3		7	
	Hernia.....									1				1	
	Morbi cutis.....							4		3		3		10	
	Morbi oculi.....			2		1		5		3		6		17	
	Scorbutus .....					4		1	1			1		6	1
	All other diseases.....	8		9		10		26	2	15		11		79	2
Total.....		99		99		74	1	249	8	97		229	1	847	10



## AMONG THE TROOPS AT POSTS IN SOUTHERN CALIFORNIA.

CLASSES OF DISEASES.	FOURTH QUARTER.												AGGREGATE STRENGTH.	
	YEARS .....	1849.	1850.	1851.	1852.	1853.	1854.							
	MEAN STRENGTH .....	141.	211.	161.	432.	320.	382.	1,650.						
SPECIFIC DISEASES.		Cases	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total med.	
Fevers .....	Febris continua communis.....					2						2		
	Febris inter. quotidiana.....					1		14		7		4	26	
	Febris intermittens tertiana.....	1		2		1		3		1		2	10	
	Febris intermittens quartana.....			2									2	
	Febris remittens.....	1				1		1				1	4	
Eruptive fevers .....	Febris typhus.....													
	Erysipelas.....													
	Rubeola.....													
Diseases of the organs connected with the digestive system.	Varicella.....													
	Cholera Asiatica.....													
	Diarrhœa.....	15		10		5		45	2	4		20	99	
	Dysentery acuta.....	2		4				1					7	
	Dysentery chronica.....	3											3	
Diseases of the respiratory system.	Enteritis.....													
	Hepatitis acuta.....													
	Hepatitis chronica.....													
	Obtupatio.....							7				10	17	
	All other diseases.....	1		2		1		8		5		7	24	
Diseases of the brain and nervous system.	Bronchitis, acuta et chronica.....			1		1				1			3	
	Catarrhus.....	4		5		1		9		6		16	41	
	Phthisis pulmonalis.....					1						1	1	
	Pleuritis.....	1										2	3	
	Pneumonia.....					2		1				1	4	
Diseases of the urinary and genital organs.	All other diseases.....			1		1							2	
	Cephalalgia.....													
	Dehnum tremens.....			1		2		3				3	9	
	Epilepsia.....	1		1				2					4	
	Neuralgia.....					2				2		1	5	
Diseases of the serous and exhalant vessels.	All other diseases.....			1	1			1		1			3	
	Gonorrhœa.....	5		4		3						11	23	
	Stricture urethrae.....													
	Syphilis primitiva.....	8		4		1						2	15	
	Syphilis consecutiva.....	3				1						1	5	
Diseases of the fibrous & muscular structures.	All other diseases.....			3				3		6		6	15	
	Ascites.....													
	All other diseases.....													
	Pernio.....													
	Podagra.....													
Abscesses and ulcers.....	Rheumatismus.....	6		6		5		7		8		12	44	
	Fistula.....													
	Phlegmon et abscessus.....			4		5		12		14		8	43	
	Ulcus.....	4		5		1		3				1	14	
	Ambustio.....			1		1				1			3	
Wounds and injuries.....	Amputatio.....													
	Contusio.....	7		6		5		10		5		15	45	
	Fractura.....	1		2		1							4	
	Luxatio.....			1									1	
	Punitio.....													
Miscellaneous .....	Sub-luxatio.....					2		2		1		10	15	
	Vulnus incisum.....	1				2		3				4	10	
	Vulnus laceratum.....			2				4		2		1	9	
	Vulnus punctum.....			1									1	
	Vulnus sclopeticum.....			1						1		1	3	
Miscellaneous .....	Debilitas.....	2		1		1						1	5	
	Ebrietas.....	1				1		1				2	5	
	Hæmorrhoids.....									3		3	6	
	Hernia.....			1									1	
	Morbi cutis.....					1						1	3	
Miscellaneous .....	Morbi oculi.....			1				5		2		2	10	
	Scorbutus.....	1		4				1					6	
	All other diseases.....	4		2		4		9		7		4	30	
Total .....		72		78	1	53		159	2	77	1	152	591	5

## REPORT ON THE SICKNESS AND MORTALITY

No. 2. ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.		FIRST QUARTER.										AGGREGATE STRENGTH.		
		YEARS.....	1849.	1850.	1851.	1852.	1853.	1854.						
		MEAN STRENGTH.....	44.	238.	170.	252.	530.	281.	1,518.					
SPECIFIC DISEASES		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
Fevers.....	Febris continua communis.....			1				1		2				
	Febris inter. quotidiana.....	8		12		4	85	72		181				
	Febris intermittens tertiana.....	13		10		40	9	17		89				
	Febris intermittens quartana.....			1		6				7				
	Febris remittens.....	29		4		6	5	1		45				
	Febris typhus.....	1				1	1			2				
Eruptive fevers.....	Erysipelas.....		1				1			2				
	Rubeola.....	2								2				
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....													
	Diarrhoea.....	10	1	9	14	26	2	29		88	3			
	Dysentery acuta.....				3			2		5				
	Dysentery chronica.....	3	1							3	1			
	Enteritis.....													
	Hepatitis acuta.....	1					1			2				
	Hepatitis chronica.....													
Diseases of the respiratory system.	Obstipatio.....	2		6	4	12	5			29				
	All other diseases.....	1		1		6	3			11				
	Bronchitis, acuta et chronica.....	1		1		1	2			6				
	Catarrhus.....	1	20	3	29	35	28			116				
	Phthisis pulmonalis.....	1		1						1	1			
	Pleuritis.....				1	2				3				
	Pneumonia.....	2				1	2			5				
Diseases of the brain and nervous system.	All other diseases.....	5			1		2			8				
	Cephalalgia.....			3		1				4				
	Delirium tremens.....		9	5	6	1	3			24				
	Epilepsia.....	1			1					2				
	Neuralgia.....	2			1					3				
	All other diseases.....		2	1	1	2	2			8	1			
	Gonorrhoea.....				2		3			5				
Diseases of the urinary and genital organs.	Stricture urethrae.....				2					2				
	Syphilis primitiva.....				1					1				
	Syphilis consecutiva.....	2	2	1	1	1	4			11				
Diseases of the serous and exhalant vessels.	All other diseases.....	2			1	1	2			6				
	Ascites.....													
	All other diseases.....													
Diseases of the fibrous & muscular structures.	Perio.....													
	Podagra.....													
Abscesses and ulcers.....	Rheumatismus.....	2	11	6	4	32	6			61				
	Fistula.....													
	Phlegmon et abscessus.....	1	2	8	3	11	3			28				
	Ulcus.....		3		1		10			14				
Wounds and injuries.....	Ambustio.....					8	1			9				
	Amputatio.....													
	Contusio.....		6	4	8	11	4			33				
	Fractura.....		1		2	1				4				
	Luxatio.....				1					1				
	Pinatio.....					3				3				
	Subluxatio.....		1	1		1				3				
	Vulnus incisum.....		2	4	1	12	6			25				
	Vulnus laceratum.....					2				2				
	Vulnus punctum.....	1				2				3				
	Vulnus sclopetaceum.....			1	1	2				4				
	Debilitas.....	2		1	3	2				8				
Miscellaneous.....	Emetus.....		5		3	12	4			24				
	Haemorrhoids.....			2		4	1			7				
	Hernia.....				2		1			3				
	Morb. cutis.....				1	2	2			5				
	Morb. oculi.....				1	4	1			6				
	Scorbutus.....		11	2	1	1	2			15	2			
	Scrophul.....					1	1			1	1			
	All other diseases.....	4	6	2	13	17	12			54	1			
	Total.....		24	156	68	170	549	422			986	11		

## AMONG THE TROOPS AT POSTS IN NORTHERN CALIFORNIA.

CLASSES OF DISEASES.	SECOND QUARTER.														AGGREGATE STRENGTH.	
	YEARS .....	1849.	1850.	1851.	1852.	1853.	1854.									
	MEAN STRENGTH .....	107.	72.	207.	320.	351.	417.	1,474.								
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.			
Fevers.....	Febris continua communis.....									3		3				
	Febris inter. quotidiana .....			16		21		96		96		229				
	Febris intermittens tertiana .....		5	17		35		14		42		115				
	Febris intermittens quartana .....			1								1				
	Febris remittens .....		17	1	4	3		5		3		32	1			
Eruptive fevers .....	Febris typhus.....															
	Erysipelas.....							1				1				
Diseases of the organs connected with the digestive system.	Rubeola.....															
	Cholera Asiatica.....															
	Diarrhoea.....	17	10	1	12	27		15		37		118	1			
	Dysentery acuta.....	5	2			4		4		21	1	36	1			
	Dysentery chronica.....	7								2		9				
	Enteritis.....															
	Hepatitis acuta.....							1				1				
	Hepatitis chronica.....															
	Obstipatio.....				5	13		7		6		31				
	All other diseases.....	2	2	4	10	14		4		4		36				
Diseases of the respiratory system.	Bronchitis, acuta et chronica .....	3			11	4		4		3		21				
	Catarrhus.....	5	6	6	36	12		26		26		91				
	Phthisis pulmonalis.....	2	1				1	1				4	1			
	Pleuritis.....							1		2		3				
	Pneumonia.....									1		1				
Diseases of the brain and nervous system.	All other diseases.....		1					3				4				
	Cephalalgia.....				1	3		4				8				
	Delirium tremens.....		1	4	2	2		2	1			9	1			
	Epilepsia.....			2	5							7				
	Neuralgia.....			1				1		1		3				
Diseases of the urinary and genital organs.	All other diseases.....			3	1				1	1		4	2			
	Gonorrhoea.....			11		1				15		27				
	Stricture urethrae.....			1								1				
	Syphilis primitiva.....			16						12		28				
	Syphilis consecutiva.....			3	2	1		1				6				
Diseases of the serous and exhalant vessels.	All other diseases.....			7	1	1		1		2		11				
	Ascites.....								1				1			
	All other diseases.....									1		1				
Diseases of the fibrous & muscular structures.	Pernio.....							3				3				
	Podagra.....															
	Rheumatismus.....			9	8	17		10				44				
Abscesses and ulcers....	Fistula.....			2		1		1		1		4				
	Phlegmon et abscessus.....		2	2	22	10		20				56				
	Ulcus.....	3	1			3		1		4		12				
	Ambustio.....			1				3		1		5				
	Amputatio.....															
Wounds and injuries....	Contusio.....			4		13		12		24		53				
	Fractura.....					1		1		2		4				
	Luxatio.....															
	Punctio.....															
	Sub luxatio.....		1			4		4		2		11				
	Vulnus incisum.....			1				6		4		11				
	Vulnus laceratum.....					1				5		6				
	Vulnus punctum.....															
	Vulnus sclopeticum.....							2				2				
	Debilitas.....			2				5		1		8				
Miscellaneous .....	Ebrietas.....			3		6		10		6		25				
	Haemorrhoids.....			1		2		4		4		11				
	Hernia.....									1		1				
	Morbi cutis.....			2		1		2		2		7				
	Morbi oculi.....		2	2	11	10				5		30				
	Scorbutus.....	2		2		8				2		14				
	Suicidium.....						1						1			
	All other diseases.....		2	4	34	19	1	13				72	1			
Total.....		46	53	2	149	1	290	2	295	4	385	1	1,220			



## REPORT ON THE SICKNESS AND MORTALITY

## No. 2.—ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING

CLASSES OF DISEASES.	THIRD QUARTER.														AGGREGATE STRENGTH.	
	YEARS.....	1849.	1850.	1851.	1852.	1853.	1854.									
	MEAN STRENGTH .....		69.	261.	233.	185.	348.	1,699.								
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.			
Fevers .....	Febris continua communis .....									18		18				
	Febris inter. quotidiana .....	7		70		241		139		109		566				
	Febris intermittens tertiana .....	3		27		106		2		12		150				
	Febris intermittens quartana .....					1						1				
	Febris remittens .....			18		43		10	1			71	1			
	Febris typhus .....			1		22	10					23	10			
Eruptive fevers.....	Erysipelas .....							1				1				
	Rubeola .....															
Diseases of the organs connected with the digestive system.	Cholera Asiatica .....					160	80					160	80			
	Diarrhoea .....	2		25		292	1	7		25		351	1			
	Dysentery acuta .....	2		2		45		1		3		53				
	Dysentery chronica .....						1	1				1	1			
	Enteritis .....															
	Hepatitis acuta .....															
	Hepatitis chronica .....															
	Obstipatio .....			7		40		8		17		72				
	All other diseases .....			4		27		11	1	9		51	1			
	Bronchitis, acuta et chronica .....			2								2				
Diseases of the respiratory system.	Catarrhus .....			6		10		3		4		23				
	Phthisis pulmonalis .....			2								2				
	Pleuritis .....							1		2		3				
	Pneumonia .....															
	All other diseases .....			1								1				
	Cephalalgia .....					3				1		4				
Diseases of the brain and nervous system.	Delirium tremens .....			4							1	4	1			
	Epilepsia .....			1		3						4				
	Neuralgia .....			2						1		3				
	All other diseases .....					4	1			1		5	1			
Diseases of the urinary and genital organs.	Gonorrhoea .....			3		7		1		8		19				
	Stricture urethrae .....															
	Syphilis primitiva .....			9						2		11				
	Syphilis consecutiva .....															
Diseases of the serous and exhalant vessels.	Ascites .....	1		3		1				2		7				
	All other diseases .....					1						1				
Diseases of the fibrous & muscular structures.	Perio .....															
	Podagra .....															
	Rheumatismus .....			10		22		5		1		38				
Abscesses and ulcers....	Fistula .....			2								2				
	Phlegmon et abscessus .....			1		14		1		9		50				
	Ulcus .....			2		7		2		4		15				
Wounds and injuries.....	Amblyoma .....									1		1				
	Amputatio .....									1		1				
	Contusio .....			6		16		6		12		40				
	Fractura .....			1		2		1				4				
	Luxatio .....			1								1				
	Punctio .....															
	Sub luxatio .....					5		1		2		8				
	Vulnus incisum .....			3		5		1		3		12				
	Vulnus laceratum .....			1		5				5		11				
	Vulnus punctum .....							1		1		2				
Miscellaneous .....	Vulnus sclopetarium .....			2		1				2		5				
	Debilitas .....			1		1		2		5		9				
	Ebrietas .....			3		5		1		4		13				
	Hæmorrhoids .....			3		5		2				10				
	Hernia .....			1						1		2				
	Morbi cutis .....			5		3				3		11				
	Morbi oculi .....			1		10		3				14				
	Scorbutus .....			1		2		3		4		10				
	Suicidium .....					1	1					1	1			
	All other diseases .....			1		9		10		3		29				
Total .....				18		254		1,125	14	222	2	277	1	1,896	97	

## AMONG THE TROOPS AT POSTS IN NORTHERN CALIFORNIA.

		FOURTH QUARTER.												AGGREGATE STRENGTH.	
CLASSES OF DISEASES.	YEARS .....	1849.	1850.	1851.	1852.	1853.	1854.								
	MEAN STRENGTH.....	274.	207.	128.	466.	273.	358.								
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
Fevers .....	Febris continua communis..	1				1								2	
	Febris int. quotidiana .....	16		5		39		115	1	146		65		387	1
	Febris intermittens tertiana.	15		82		5		13		16		11		142	
	Febris intermittens quartana.					1						1		2	
	Febris remittens .....	50		4		18		12		7				91	
Eruptive fevers.....	Febris typhus.....					2		6	5					8	5
	Erysipelas.....	2		1				1						3	1
	Rubeola.....														
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....														
	Diarrhoea.....	16		8	1	10		52	4	28		17		131	5
	Dysentery acuta.....	22				4	1	19				1		46	1
	Dysentery chronica.....			1				4	1					1	5
	Enteritis.....														
	Hepatitis acuta.....					2						1		3	
	Hepatitis chronica.....									1				1	
	Obstipatio.....			1		2		8		8		2		21	
Diseases of the respiratory system.	All other diseases.....	3		2		3		13		5	1	6		32	1
	Bronchitis, acuta et chronica	4						1						5	
	Catarrhus.....	7				17		70		13		5		112	
	Phthisis pulmonalis.....	1		1	1					1				2	2
	Pleuritis.....					1						1		2	
	Pneumonia.....							1						1	
Diseases of the brain and nervous system.	All other diseases.....	1						1		2	1			4	1
	Cephalalgia.....			3				9		4		1		17	
	Delirium tremens.....	3		5	1	5		1	2					17	3
	Epilepsia.....					1		1						2	
	Neuralgia.....	2		1										3	
Diseases of the urinary and genital organs.	All other diseases.....					1		2						3	
	Gonorrhoea.....	2		2		4		2				4		14	
	Stricture urethrae.....					1								1	
	Syphilis primitiva.....			1		1				2		8		12	
	Syphilis consecutiva.....	1												1	
Diseases of the serous and exhalant vessels.	All other diseases.....									2				2	
	Ascites.....							1							1
Diseases of the fibrous & muscular structures.	All other diseases.....	2	2					1		2				5	2
	Pernio.....	1												1	
	Podagra.....														
Abscesses and ulcers....	Rheumatismus.....	6		6		6		20		8		2		48	
	Fistula.....														
	Phlegmon et abscessus.....	1		3		5		19		8		5		41	
	Ulcus.....	1		1				5		8		7		22	
	Ambustio.....			1		1		1		2				8	
Wounds and injuries.....	Amputatio.....														
	Contusio.....	4		5		5		20		14		12		60	
	Fractura.....					1		1		1		1		4	
	Luxatio.....														
	Punitio.....														
	Sub luxatio.....					1				1		2		4	
	Vulnus incisum.....	2		1		2		3		4		1		13	
	Vulnus laceratum.....	1						3		5		1		10	
	Vulnus punctum.....					1								1	
	Vulnus sclopeticum.....			1		1								2	
Miscellaneous .....	Debilitas.....	3				5		12		6		1		27	
	Ebrietas.....			1		2		10		2		1		16	
	Hæmorrhoids.....	1				2		1				1		5	
	Hernia.....	1				1								2	
	Morbi cutis.....					2		2				1		5	
	Morbi oculi.....	3				1		5		5		3		17	
	Scorbutus.....	46	4	1				3				3		53	4
	Suicidium.....														
Total.....		222	7	142	3	164	1	428	19	319	2	173		1,478	32





# OREGON AND WASHINGTON TERRITORIES.

THE troops serving in the Territories of Oregon and Washington have been, for the most part, stationed at Fort Lane, Fort Orford, Astoria, Fort Vancouver or Columbia Barracks, Fort Dalles, Cantonment Loring, and Fort Steilacoom.

In the absence of special reports, the compiler is only able to state, in regard to Fort Lane, that it is situated in the interior of the southern part of Oregon, on Rogue river, in a valley opening to the west, having high mountain ranges in the vicinity. It was established in December, 1853.

FORT ORFORD is at Port Orford, about ten miles south of Cape Blanco or Orford. The position is at the head of Tichenor bay, opening southward, with a direct exposure to the Pacific.

## FORT VANCOUVER.

A medico-topographical report of this post, furnished by Assistant Surgeon Holden, in 1849, was received in a damaged condition, having been wet in the mail, and is now, on examination, found illegible. As the immediate site of the fort has been changed since that period, the loss is the less to be regretted. The present position is about ninety miles in a direct line from the sea, on the north side of the Columbia river, and consequently within the Territory of Washington. The river is about 1,600 yards wide, and fourteen feet deep at the fort. The country adjacent is covered with lofty pines. The valley of the river opens northwestward here, and the Coast range of mountains protects the post from sea exposure.

## MEDICAL TOPOGRAPHY AND DISEASES OF ASTORIA.

By Assistant Surgeon Israel Moses : 1852.

The Columbia river is formed by the confluence of two streams; the northern, or Clark's river, arises in the Rocky Mountains, about latitude  $54^{\circ}$ , near some high peaks, called Hooker and Brown; the southern, called also Lewis', Saptin, or Snake river, having its source in the Wind River chain, in latitude  $43^{\circ}$ , and following an irregular and serpentine course, unites its waters with those of the North branch, near Fort Wallawalla, to form the largest river on this Pacific coast, which pours its immense volume into the ocean, in latitude  $46^{\circ} 30'$ .

Cape Disappointment, on the north, is a high, narrow, and pine-covered promontory, joining the main land by a low neck, over which there is a portage for canoes and boats to Shoal-water bay. The shore sweeps round to Chinook point, forming a deep bay (Baker's) six miles wide. Chinook point, which is the chief fishing ground of the natives, is a bare hill, gradually sloping towards the water, and sending a long sand-spit far into the bay. From this point the northern bank of the river stretches along with numerous indentations, and receives several small streams.

Point Adams—a low, sandy spit, putting out some two miles—forms the southern promontory, about four miles across from Cape Disappointment. This is the terminating point of an exten-

sive flat, sandy plain, of more than twenty miles long and four wide, thrown up by the waves, and left by a retrocession of the ocean. The original and true southern promontory is Killamook Head, now thirty miles below the mouth of the river. The entrances from the sea are two narrow channels leading into Baker's bay and along the southern promontory, between sand-spits and shoals, over which the waves foam and boil in so tumultuous a manner when the wind is high, as to have rendered the entrance of this river a terror to mariners. Wild and awful, too, is the picture, and fearful the sensation, to the stranger who approaches this notorious bar for the first time during the winter season. The dangers have, however, been much lessened by the indefatigable energy and perseverance of Captain Charles White, of New York, who, in the winter of 1849-'50, brought up a pilot-boat and perilled life and property in his professional exertions to diminish the dangers of the bar. Previous to this time no vessel had been brought in by the southern channel. He, however, soon established it as the safest and easiest entrance, and since then few vessels have followed the former route. Though this southern entrance has been known, and is spoken of by Wilkes, it was condemned as highly dangerous. Within a comparatively short period, however, the main current of the river seems to have changed towards the southern shore; and not only has the channel deepened and become more direct, but the banks have yielded; and should the change continue, time will still farther diminish the risk as the commerce of the country attracts greater numbers of vessels.

From Point Adams to Shark Point the shore makes a deep bend, forming Young's bay, about four and a half or five miles across, into which flow several small streams from the south. From Shark Point to Tongue Point—a high, narrow peninsula—the shore forms a gentle curve, interrupted by a projecting shelf, of small extent, where is the site of the original Astoria, and now occupied as a military post. The place commemorates, by its name, the originator of one of those bold strokes of genius which commercial minds often conceive for the extension of trade, and which not only brings pecuniary gains to the individual, but opens new and extended sources of national wealth. What then failed of success, through the infidelity of private agents and the breaking out of national hostilities, the unalterable course of destiny has brought about; not, however, before a rival and foreign company have for years held undisputed sway, and reaped a golden harvest.

Strangers arriving in the country are universally disappointed on seeing Astoria. Their memory filled with the entertaining narrative of the early settlement of the place, written by Washington Irving, a pleasing picture of an old settlement arises in their mind, and with eager gaze, as they enter the river, their eyes seek this familiar spot; but their dream is soon dispelled by the view of a line of rough bank, thickly grown with fir-trees to the water's edge, and rising in irregular and broken back-ground.

On our arrival at this place, but little of the original establishment could be traced; the knoll upon which the buildings stand contains about twenty acres of cleared land, backed by an impenetrable forest of pines. All the structures erected by the first occupants were destroyed by fire some years ago, and their only memorials are the decaying ends of pickets and heaps of crumbling chimneys. The Hudson's Bay Company erected several buildings, and made improvements, as long as the trade with the Indians made its occupancy desirable; but for several years previous to our arrival, the post had become of little trading value, and the buildings had been allowed to fall into decay.

After the treaty of 1846, when the provisional territorial government enacted laws for the benefit of settlers, the lands between Shark and Tongue points were taken as "claims" by squatters, who have built themselves small houses and cultivated garden patches. The site occupied and recognized as Astoria was included in these claims, without any respect to its occupancy, by the Hudson's Bay Company. On the arrival of General John Adair, the first collector at the port of Astoria, the custom-house and post office were located one mile above, where he established himself; and this spot is now called Astoria by some, while that below is distinguished as Fort George; but this is contended by the rival occupants. Since the establish-



ment of the military at this post, the citizens still occupy in common with the troops; and no reserves in this Territory having been confirmed at Washington, they have continued to erect buildings and make improvements.\*

Immediately upon our arrival we went into camp, and set to work busily to repair the buildings abandoned by the company, and erect such others as would afford us convenient shelter for the approaching winter. This was accomplished early in November.

The country, generally, in the vicinity of Astoria, is extremely rough and rugged, broken by hills and gulches, covered with a dense forest of hemlock, spruce, cedar, cottonwood, ash, and willow, with an undergrowth of shrubs, bushes, and vines, that render it almost impossible for man or animal to penetrate. A few localities are less densely wooded, and entice the settler to pitch his tent and commence the toil of opening a farm. Clatsop plains, about fifteen miles long and four wide, is the only farming district which, as yet, has yielded crops. It is a series of three sand ridges, successively thrown up by the ocean's waves, and left by its receding waters; the more recent formation is covered with a thin stratum of decayed vegetable matter, which increases so as to afford a foot or more depth of soil in the older formation; a narrow, shallow rivulet winds through, fringed with cottonwoods and willows. A narrow belt of forest separates these plains from the richer soil.

At Astoria, the soil is, for the most part, a heavy red and black clay, mixed with some gravel, which becomes, during the rainy season, soft and sticky; and in the summer, dry and fissured; the beach is covered with pebbles and conglomerate of clay and lime, enclosing petrified shells and marine animals. Broken masses of scoriaceous rock lie along the water's edge and crop out from the banks.

Pre-eminent among the forest trees, are those of the pine tribe; three varieties are found: *abies Douglasii*, often attaining incredible height and circumference; *abies Menziesii* and *A. taxifolia*, or yew-leaved hemlock; *thuga occidentalis*, or red cedar; also *juniperus Virginiana*, or Virginian juniper; *acer macrophylla*, or large-leaved maple, not found east of the Rocky Mountains; and *A. circinata*, or vine maple. Of the varieties of cottonwoods: *populus balsamifera*, *P. candidum*, and *P. tremulus*, or aspen; *Salix macrophylla*, and *angustifolia*, large and low-leaved willows; *quercus alba*, or white oak, is not found below Tongue Point; *fraxinus nigra*, black ash; *cerasus Pennsylvanicus*, or wild cherry; and *arbutus laurifolia*, are the most prominent of the trees. There are innumerable varieties of bushes and creeping plants: *Ribes sanguinaria*, red flowering currant; *ribes spuriosa*, wild gooseberry; *rubus nutocamis*, capberry; *R. spectabilis*, thumb-raspberry; and *R. pinnatifolia*; the strawberry, *fragaria vesca*; cranberry, *oxycoccus macrocarpus*; *gaultheria shallon*. These are all wild; their fruit inferior in size and flavor to the cultivated varieties. The potato, turnip, cabbage, and beet, are largely cultivated, and attain an enormous size and great perfection. Wheat and corn will not ripen except in warm-sheltered nooks; oats are well adapted to the soil and climate: the small garden vegetables only succeed with great care, and are apt to be destroyed by the cold nights and late frosts; the larger fruits—peaches, apples, and pears—do not ripen. The grasses, growing on the tide-lands, are tender, and afford a nutritious food to animals, who are able to keep in good condition throughout the year by grazing. Farmers rarely make any winter provision for their stock, the mildness of the winter not requiring them to be housed or fed.

Deer, antelope, and black bear, are found immediately in the vicinity: the cougar inhabits the woods with the rabbit and squirrel; beaver and otter are found on the small streams and along the coast; the various species of wild fowl—swan, sandhill crane, geese, ducks, and snipe—abound, and are brought in in plentiful supply by the Indians; there are also pelicans, gulls, eagles, (the bald and osprey,) crows, ravens, woodpeckers, swallows, and robins; flocks of pigeons, or doves, (*Columba zanaida*), not found on the Atlantic coast, arrive early in the spring, and the trees are often broken by their weight: they are inferior in flavor to the wild pigeon on

\* Since the above was written, Astoria has been given up as a military post, and Cape Disappointment has been reserved.



the eastern side of the mountains: the grouse and pheasant do not inhabit this locality; there is a remarkable absence of singing-birds.

Of the reptilia, none of the poisonous varieties are found; a green snake, with longitudinal dark stripes, two to three feet long, the lizard, and snail, are seen.

Comparatively few flies, and no mosquitoes, or other annoying insects, disturb the resident; the sand-fly is occasionally troublesome toward sunset, on warm and still evenings.

The principal food of the natives, and, until within a very few years of the early settlers in this vicinity, consisted of fish, which, from its abundance and variety, affords plentiful provision throughout the year. Soon after the rainy season, and early in spring, the fishing season commences, and the natives awake from their winter lethargy to prepare for the busy time that approaches. Canoes are launched and refitted; the nets are repaired, and gay trappings put on. This is the season of mirth and plenty. About the middle of April, the sturgeon (*Accipenser*) makes its appearance; its flesh is more delicate and palatable than the same variety caught on the Atlantic coast. The natives take it by hook and line, or spear; it attains a very large size. Toward the middle of May the salmon (*salmo salar*) begin to come in, and increase so as to make the bay merry with their sport; they swim near the surface, and continually leap into the air, often several feet high; they run in vast shoals until the middle of summer. Sunrise and sunset are the most favorable periods for taking them; and the best fishing grounds are where the sand-spits run far out in the bay. Chinook Point is the favorite resort of the tribes at the mouth of the Columbia; and here, morning and evening, they draw their nets, or, standing waistdeep in the water, spear their game. Their nets are long and narrow, made of grass-twine; the sinkers, of stones, and floats, of wood. Leaving one end fixed in the beach, the remainder is coiled up in a small canoe, which is paddled out thirty or forty yards, following a long curve, and again brought to shore. This is continued as often as fish are caught, or until the required number are obtained. An ancient superstition deters them from selling to the whites until the salmon berries are ripe; and, in no case, will they part with a salmon until the heart is taken out. Upon the strict observance of these points, they rely for the plentifulness of the season. To prepare for winter use, the salmon is cut in thin slices or strips and dried on frames hung over slow fires and along the rafters of the lodge, or pounded fine and put up in bundles after being dried. The fall, or *masache* salmon, is an inferior variety, which runs in September and October; lean, of a pale pink color; and having long sharp teeth. In seasons of scarcity, it is put up for winter use; but is generally not much esteemed. Richardson, in his *Fauna Americana*, describes seven varieties of salmon in the Columbia river.

The cod, or a fish much resembling it, is taken at the entrance of the bay, outside of the bar. Of the small fish—flounder, perch, suckers, and, occasionally, the “ulican;” this last, from being very abundant, suddenly disappeared from this locality, and is now found only in the harbors and inlets to the north. It is a delicious fish, resembling our “smelt” in size and flavor, and so fat that, when dried, it is often burned by the natives to give light. The fisheries have, to a limited extent, been carried on by the Hudson’s Bay Company, as a matter of commerce, and lately by Americans. The salmon is salted and put up in barrels, and has obtained a good market in the islands and in California. In experienced hands, it would prove a source of great profit. Oysters are found in the bays and inlets, north of Cape Disappointment, small in size, but of good flavor; the various kinds of soft and hard-shelled clams, muscles, terrapins, and crawfish. The former are large and of fine flavor, superior to the oysters, which are much improved by cultivation. Contemptible, however, as they would appear to one living on the Atlantic coast, they are readily sold in San Francisco at the enormous price of ten dollars the bushel. A gentleman from Virginia is now engaged in planting and feeding them, and from his success, thus far, there is every reason for believing they will attain a size and flavor equal to the finest of our Atlantic shore.

From the above imperfect notice of the natural productions, I turn to a brief account of the

Indian tribes residing near the mouth of the Columbia. These consist of a few and wretched representatives of three once powerful tribes—the Chinooks, Clatsops, and Cathlamets.

The Chinooks reside on the north bank of the river, along Baker's bay, Chinook point, and Shoal-water bay, and are about 150 in number. They once boasted of 300 warriors, and the famous Concomly as their chief, but are now fast disappearing before the white man: their fishing grounds are desirable for future value, and even their burial-places are eagerly sought after as "good claims."

The Clatsops reside, as their name imports, on Clatsop plains. This tribe, which, at the time of the settlement of Astoria, numbered 180 warriors, is now reduced to about 20, who can hardly be said to have a local habitation. They wander about, pitching their tents or lounging about the residences of the whites, awaiting the no distant period of their entire extermination.

The Cathlamets, who are found on the island and along the banks of the river, twenty or thirty miles above, have been less exposed to intercourse with the whites, and have not disappeared as rapidly: they are, however, scattered, few in number, and gradually becoming extinct. Among them resides an old Indian, called Squamarke, who is looked upon as a sort of chief of all these scattered bands, and exerts considerable influence among them. I have heard him recite, in poetic strain, of the past glories of his race: of the martial deeds of his sire: the trophies of victory, and the *triumphs* after return from battle; yet, this bard of military deeds and last representative of the shadowy glory of the race, does not scruple to get beastly drunk, and has lately sold his grand-daughter for one hundred and fifty dollars, payable in blankets.

All feud has ceased among these various tribes; neither has anything to excite the cupidity of the other, and but few individuals are possessed of any weapons. They rarely quarrel, except when maddened by intoxicating drinks, and then, not unfrequently, one or more are shot or stabbed. He who possesses a canoe and a few blankets is esteemed wealthy: rarely an individual accumulates about him a large number of articles of finery. A few horses are found among them; but their chief mode of conveyance is by canoes, and it excites our surprise and admiration to witness the skill with which they manage these beautiful models of naval architecture. They are shaped from cedar-trees, and vary greatly in size. Those used by the natives along the coast, and in the neighborhood of Puget Sound, are often from forty to sixty feet in length, and twelve to fifteen feet in breadth of beam, capable of accommodating sixty men. They are rapidly propelled through the water by short paddles, skilfully handled by both sexes, who kneel on rushes placed in the bottom of the canoe. Their shape is the model, in many points, of our new clipper ships, long, sharp bows, with little curve from gunwale to keel; painted or stained black on the outside, and red within; their prows ornamented with small pebbles or shells. A hatchet and knife are the only tools employed in shaping them, and we cannot refrain from admiring the ingenuity of a people who can achieve such perfection of finish with rude instruments. What might they not accomplish, if supplied with and taught the use of tools, employed in our mechanical arts? In rough and windy weather, they carry an immense sail, and the canoe is impelled through the water with the speed of a fish, rising on the tops of the highest waves without danger of upsetting. When the stormy west winds are driving the white caps high on the bar, I have heard a party shouting and singing, with gay dresses and gaudy ribbons, as their little bark tossed and sported on the angry waters. These coast Indians are as much at home on the water as the Apache on the plains, or the Arab on the desert.

All these several tribes speak the same language, follow the same customs, and resemble each other in manners, dress, and person. The majority of both sexes are short, with heavy, stout bodies and limbs; generally from five to five and a half feet in height, with low forehead, rendered still lower in appearance by the flattening of the head; long, straight, coarse black hair, which is preserved with great care by both sexes; they comb, grease with fish-oil, plait, braid, and decorate it with bright ribbons. All traces of beard on the face are carefully eradicated; also



that on the pubes of either sex. Mouth wide, teeth small, and often worn to the gums; lips short, thick, and everted. The females, especially, often become grossly fat. They have short, bowed, fat legs and thighs, large ancles, but small feet. The females have no attraction of face or form. Personal beauty is rarely seen. They are filthy in their habits and persons. When they have been taken as wives by the early settlers they easily learn the customs, and accommodate themselves to cleanly and domestic habits. The half-breeds are more comely, and occasionally handsome. These, as soon as they reach the age of puberty, and sometimes even before, become the wives or mistresses of the whites. These Indians have generally assumed the dress of civilized nations, and a few seem well and genteelly clothed. Many of the females have learned to make their own garments. Most frequently they present a fantastic arrangement of articles. In their primitive condition their only mantle in summer was a fringe made of grass, or fibres of cedar bark, covering the pelvis; in winter they wrapped themselves in mats or the skins of animals, and burying themselves in holes dug in the ground, or small lodges built of mats and cedar branches, there remain during the rainy season, with a small fire in the centre, filling the place with smoke—a small aperture in the roof being its only means of escape. Within a few years they have erected large lodges of boards and planks picked up along the river banks carried down by the current, and floated off from the mills by the spring freshets. Since the discovery of gold on the Pacific coast the Indians have occasionally accumulated quite large sums, but, as their only idea of the object of money is to satisfy their immediate wants, they rarely have it. When the mines of California almost entirely deprived Oregon of its male population, the Indians became useful as laborers; and when canoe travelling was the only means of transportation, they reaped a rich harvest. Like all savage tribes, they are inconstant, and, having obtained sufficient to satisfy their present desires, no inducements will prevail upon them to continue any useful occupation.

In morals they resemble most of the Indian tribes. As soon as a man is able to support a wife he makes his selection, informs the parents and friends who, in conclave, determine the amount to be paid by the suitor. This being arranged satisfactorily, a day is appointed when a mutual exchange is made; the bride being turned over to the groom, the blankets, horses, canoes, and slaves are paid to the wife's relations; a dance, a feast, an exchange of presents, and not unfrequently a bloody quarrel end the ceremony. A chief may possess as many wives as he can support, but, as among less barbarous nations, he has one favorite. Being thus a merchantable article, their women may be procured by any respectable native or white man who can afford the prices. Chastity is unknown among the single, and constancy rarely practised among the married. Occasional exceptions may be found among those who have white husbands.

Their religion, if it may be so called, is the belief in a good and evil spirit. The former dwells above, and is called "Sahaleedikee" (a name given to any high official personage), who, when pleased, sends mild winters, abundance of salmon, and fruitful summers. His wrath is betokened by a hard winter, scarcity, and epidemic diseases. There are some curious and interesting myths among them. Particular localities are supposed to be the favorite abodes of the good spirit. They have a faint tradition of a deluge and earthquakes.

The decay of the Indian tribes along the Columbia has been fearfully rapid. A robust and numerous people, they have disappeared almost as by the wand of a magician. A severely fatal epidemic of measles carried off nearly half the tribes in 1829 and 1830, which was followed by a congestive form of intermittent fever, that has reappeared at various times, and created vast havoc; but the scourge of these nations has been syphilis, and its sequent, scrofula, in the most fatal forms. At the period of Lewis and Clark's visit to the mouth of the Columbia, syphilis was scarcely known; but as soon as vessels began to enter the river the disease appeared, and rapidly spread. Ignorant of any curative means, vast numbers have died from the primary disease, while in its secondary and transmitted forms, generations have perished unborn; glandular and eruptive diseases have carried off the infants; tubercular phthisis blighted their youths,



and brought their young men and matrons to premature old age, and an early grave. It is remarkable that very few can be found among the men who have not lost one eye by ophthalmia (syphilitic or gonorrhœal). Many are absolutely deformed by enlargement of the cervical glands, frequently suppurating, discharging, and forming frightful cicatrices. Hare-lip and cleft palate are often seen; the idiopathic, and severer forms of malarial fever, almost never. Abortion is common, and not unfrequently brought about intentionally. Child-bearing is a no more easy nor less dangerous process than among other females in the same circumstances of life. The older females of the neighborhood are the midwives, and are quite as good and useful as our more fashionable *monthly nurses*. Where nature is not interfered with, and no unusual malposition or malformation presents, the infant safely enters the world. Should any anomalous circumstances arise, the child or mother, or most frequently both, are sacrificed. The attending midwife calls in consultation other *sage femmes*, and these failing to afford relief, the woman is left to die. But deformity of the pelvis being rare, and the children generally small, these accidents seldom occur. The infant, immediately after ablution, is straightened out, tightly swathed, with the arms included, and placed on a board to be submitted to the process of flattening of the head. This is effected by pads, suitably placed over the frontal bone, inclining from the superciliary arch to the vertex; counter pressure being made by a pad under the occipital bone. The pressure is maintained during one year, when the bones having sufficiently ossified to retain the desired shape, the pads are removed. Infants do not appear to suffer by this pressure, which is kept up day and night; they nurse well, and sleep comfortably. Among certain tribes side-pads are used, so as to render the head pointed; but this is not followed with the Chinooks.

In ordinary cases of sickness the aid of the medicine man, or doctor, is called in. This individual is held in high estimation, and demands large fees for his advice and services; these are given at a vast personal risk, and somewhat upon the terms of their advertising professional brethren in large cities. Upon visiting the patient, and receiving his fee, the doctor goes actively to work to drive out the evil spirit from the suffering body, where it has assumed the form of a wolf, a snake, a beaver, or large stone. The friends having formed a circle, a low and solemn incantation is commenced, accompanied by the regular beating of small sticks of wood, and gradually swelling in tone and rapidity of utterance until it becomes a howling, yelling, frightful succession of sounds. The doctor, sitting at the bed-side, swaying his body to and fro, keeping time to his song of invocation, begins to press and knead the breast and abdomen. As he becomes excited, he jumps up, and dances about the lodge, with constant and most fatiguing gesticulation of head, arms, legs, and body, until he either becomes frantic by excitement, or falls exhausted. Having by this time arrived at a just appreciation of the shape of the disease, he retires from the lodge, and after a suitable interval returns, and in a most dignified manner resumes his position and song. When thus a second time the necessary pitch of excitement is attained, he suddenly thrusts his hands beneath the blankets, and to the surprise, delight, and admiration of the assembled friends, jerks out, and casts among them, a dead wolf, serpent, beaver, or stone, having thus successfully combatted the disease. Should the unhappy victim of Æsculapian art fortunately get well, the doctor remains in peaceful enjoyment of his professional gains. Should death, however, have knocked at the door of the lodge during these mockeries, as he invariably does in severe cases, the doctor not only has expended his time and labor for nothing, but now has forfeited his life by failing to restore his patient to health. If he can compromise the matter with the relations and friends of the diseased, by paying his value, estimated in horses, blankets, canoes, or slaves, he redeems his own life; but failing to satisfy the demands of the afflicted, who are usually very exacting, he may not expect to live to see the sun rise many times.

The burial grounds in the neighborhood and along the river, attest the numbers of this people who have passed away; they are sacred spots near the bank, and often on naked and isolated rocks. The corpse, if of a chief, or distinguished man, attired in his best habiliments

and gaudiest ornaments, is wrapped in blankets, and placed in his canoe, his fishing-net and spears by his side; around are hung cooking utensils, tin-pans, and plates; and thus equipped, he is suspended on the branches of a tree, or raised on a platform, if buried on the main land; or secured on the top of some island rock, his spirit enjoying the fullness of happiness above, his body to await the solemn day of resurrection, when he shall be prepared to launch his barque upon the gladsome waters, and the sporting salmon shall yield him abundance.

The most noticeable feature in the climate of Astoria is its equability. The summers are cool, dry, and healthy; the winters stormy, rainy, and disagreeable, but mild. The troops arriving early in June, went into camp, and remained in tents until November, by which time suitable buildings had been prepared for their accommodation. \* \* \* \* \*

From the hospital records it is ascertained that, during the first month after our arrival, five cases of malarial fever occurred, and two in each of the next two succeeding months. There were relapses, caused by exposure and lying on the ground, in persons who had suffered from the disease at Vancouver. No other case occurred subsequently among the troops, and the disease, when it attacked either the citizens or Indians, could be distinctly and directly traced to a visit up the river. I did not see a single case of any idiopathic fever. Five cases of erysipelas occurred—one in October, two in November, and two in December, 1850, and may be accounted for by the prevalence of cold, rainy, and foggy weather; the men being in tents until the middle of November. The disease was mild, and yielded readily to the external application of a strong solution of nitrate of silver and the administration of full doses of quinine—a plan of treatment which I found highly successful in Toluca, Mexico, where the disease arose from the same exciting causes.

Affections of the bowels prevailed to a considerable extent during the summer and autumn of 1850, although the cases among the troops were mild and of short duration. I met with many severe, and three fatal, cases among citizens. The cholera which prevailed in California seemed to extend its influence in some degree to this place. One well marked case occurred about a mile above our post. A large proportion of the residents of Pacific City (a small village under Cape Disappointment), were attacked with diarrhœa and dysentery; one fatal case occurred, to which I was called a few hours before death. The patient had frequent and copious dejections of dark clotted blood, mingled with some fecal matter; he had been sick only six or seven days. Several passengers died on the voyage, and others arrived at this post ill with bowel complaints. Of those who were landed and placed under my care, two died with the same, but less urgent symptoms, as the fatal case at Pacific City. One family, consisting of father, mother, and three children, were seized within a few hours of each other. Blisters to the abdomen, opium and mineral astringents, with the most careful diet, were the principal therapeutic means employed.

Constipation being often complained of among troops as a reality, or oftener as a reason for being excused from duty, the twelve cases reported will be found nearly equally distributed through the sixteen months.

One-eighth of all the cases reported were catarrhs, mostly of a mild character. In December, 1850, an influenza prevailed, and many complained, but the symptoms not being sufficiently urgent the cases are not reported. This influence was felt in the interior of the Territory among the inhabitants generally; two cases among the troops were attended with active febrile movement, intense headache, pains in the back and limbs, anorexia, and painful cough; antimonials and low diet relieved the symptoms, and convalescence was rapid. Seven cases of catarrh occurred in April, 1851, among a detachment of rifles en route for California; they had just left their comfortable quarters at Columbia Barracks, and were exposed in tents at Astoria during wet weather; occasional cases occurred during other months.

More than one-third of all the cases were syphilitic, which being early taken in hospital, readily yielded to the usual remedies; the frequency of this disease is explained by my previous remarks concerning the Indians. Rheumatism was confined to two or three old soldiers, who,



after any unusual exposure or before any extraordinary detail, were certain to have an attack. Twenty-six, or one-eighth of all reported, were cases of injuries or wounds: two burns among the cooks from scalding water; fourteen contusions among artificers and working parties; one fracture of the finger, produced by a blow; one luxation of the shoulder joint; one subluxation of the ankle joint; and seven cuts inflicted with an axe in the act of chopping, or in the carpenter's shop by sharp tools.

From the above analysis of the sick-report, it will appear that the troops at this post enjoyed an almost complete immunity from disease having an endemic origin, and, leaving out venereal diseases, an unusual degree of good health. The monthly average strength being  $57\frac{1}{2}$ , gave a sick report of  $12\frac{5}{8}$ , or one case in about every two-and-a-half days; or, for the whole period, one case of sickness or wound for every four-and-a-half men.

While the equableness of the temperature throughout the year, the mildness of the climate, and the absence of all causes of endemic disease, ensure perfect healthfulness, there are few who would select this as an agreeable place of permanent residence. The winters are cheerless: rain falling day after day for nearly six months; a dense foggy atmosphere, with hardly an interval of sunshine. The summers, short and dry; atmosphere frequently foggy or smoky; warm mornings, succeeded about 10, A. M., by a fresh sea-breeze and cool evenings. Late in the spring, a cold, frosty northwest wind will frequently blow suddenly, accompanied by hail, blighting the young leaves and killing tender plants which have struggled into a feeble existence. I found the temperature so unpleasantly cool during the evening while in camp soon after our arrival, that I invariably had a fire kindled in front of my tent, or passed the time in our mess-tent, where a large stove was put up; and during the whole period of my residence at Astoria, I can confidently say, there were not ten days that I was without fire in my quarters. During the warmest hours of the warmest days we could not complain of heat. Summer vestments were never needed. If a few hours, early in the day, seduce one into assuming a lighter material, the cool sea-breeze of the afternoon soon warns him that comfort requires woolen garments. I would not be understood, however, that there is no pleasant weather; on the contrary, there are days when one may enjoy the brightest rays of the sun, the clearest and deepest of blue skies, the balmy breathings of the south, and nights when heaven seems to have unfolded the brightest page of its mystic scroll. The aurora is frequent during the spring, and intensely brilliant. Thunder-storms are not frequent nor severe.

Astoria affords a pleasant place of resort from the hot, dusty, and malarial atmosphere of Portland and its vicinity; and in the future growth of the Territory, Clatsop plains will be on these western shores what Newport and Cape May are on the Atlantic. The fashionable belle, paled by her winter's dissipation, and the gouty and overfed man of business will flee the city, to enjoy a few weeks of pure air and renew their vigor in the sportive waves of the Pacific ocean.

#### FORT DALLES.

The post at the Dalles of the Columbia, so called from the river being compressed by the encroaching rocky cliffs into a narrow *cut*, through which the whole volume of water rushes, is a few miles above the entrance of the river into the mountain ridges, jutting out from the Cascade range, and two hundred miles from the Pacific ocean. The site selected is a half mile from the south bank of the river, and elevated above it about one hundred feet, with hills in the rear rising several hundred feet. A mountain stream immediately westward supplies excellent water to the garrison. The valley of this stream, and the adjacent hills, are covered with pine and dwarf oak; with which exception, the whole face of the country within view is bare of timber. Like all of middle Oregon, this is an admirable grazing country; but owing to the long dry season, is scarcely susceptible of cultivation. The annual freshet in the Columbia occurs in May or June; the waters not subsiding for two or three months. The rise is many feet; but as the river is generally confined between precipitous basaltic cliffs, there is



little inundation. A tract of low ground, one or two miles above the post, is partially overflowed. This is eminently a volcanic region—basalt and basaltic conglomerate abounding. Two peaks, perpetually snow-capped, are in full view; the one to the N.N.W.; the other, Mount Hood, about thirty miles to the S.W. Strong westwardly winds prevail during the dry season, which lasts from March until November. The position may be considered perfectly salubrious. Within the experience of the residents of the adjacent missions, fevers of every description, or any local diseases, are entirely unknown. (*From quarterly report of Assistant Surgeon Charles H. Smith: 1850.*)

#### CANTONMENT LORING.

Cantonment Loring is situated in the low, level valley, formed principally by the confluence of the Pat. Neuf with the Snake or Lewis' fork of the Columbia river. No precise estimate has yet been made of the extent of this valley; but from the best information, it would appear to be from forty-five to fifty or sixty miles in length, and varies in breadth from two to five, and in some places perhaps to seven or eight miles. It has a good, though generally light and spongy soil; and is abundantly supplied with springs, where a number of small and beautiful streams have their origin, as well as numerous impassable sloughs and marshes. These, together with the unsolid nature of the soil, render travelling over the valley somewhat difficult; unless it be when they are frozen, or about the last of August or first of September, when they are usually tolerably firm. There is but little other vegetable matter in or about these than two or three varieties of coarse, rank grass. The Cantonment is upon the left bank of the smaller portion or fork of Snake river, which divides four or five miles above into two principal branches; these again unite four or five miles below, and form an island, which lies chiefly on the west side of the Cantonment. This island is moderately well timbered with cottonwood of considerable size, but the greater portion of it is rather covered with small undergrowth. It is quite marshy and considerably cut up with sloughs, which are almost invariably a part of, or are connected with, one or the other branches of the main stream. The Cantonment is about fifteen miles above the confluence alluded to, and five miles east of Fort Hall; which, according to the only observation yet made, is in latitude  $43^{\circ} 1' 30''$  north, and longitude  $112^{\circ} 29' 54''$  west; and elevation above the sea, 4,500 feet. (*From quarterly report of Assistant Surgeon W. F. Edgar: 1849.*)

#### MEDICAL TOPOGRAPHY AND DISEASES OF FORT STEILACOOM.

By Assistant Surgeon J. M. Haden: 1853.

Steilacoom is situated in latitude  $47^{\circ} 10' 57''$  north, and longitude  $122^{\circ} 33'$  west from Greenwich, one mile east from Puget Sound, and about three hundred feet above the level of the sea. The Cascade range of mountains, running north and south, is east, distant about thirty miles; and one of its snow-capped peaks, having an altitude of 14,000 feet, is directly in view. By riding a few miles from the post, several other snow-peaks of this mountain are visible; and also the snow-capped peaks of the Olympian range, distant about forty miles on the west. Along the sound, varying from one to two miles in breadth, and near the mountains, are dense and lofty forests. The country immediately around is composed of beautiful undulating prairies, intersected by numerous small streams, which have their sources in the fresh-water lakes with which the prairies are interspersed. The prairies are separated from each other, and surrounded by dense and almost impenetrable forests, while they are interspersed with numerous groves of oak, which give them a most beautiful and park-like appearance. The lakes are several hundred feet above the level of the sea; of perfectly fresh water, with gravel beaches and bottoms, and vary from one to six or eight miles in circumference. Springs of pure water are abundant, both in the prairies and woodlands. The soil in this vicinity, particularly of the prairies, is composed of a mixture of sand and gravel, and is al-

most entirely unfit for agricultural purposes, except on the margins of the streams and in low places near the lakes. The soil of the woodlands is of a different nature, being a kind of loam; but so dense are the forests, that years will elapse before it is brought into requisition.

The forests are composed of fir, cedar, pine, hemlock, yew, oak, maple, ash, cottonwood, dogwood, alder, elder, crab-apple, aspen, hazle, &c. The fir, cedar, and pine, growing on the highlands; the oak on the prairies; and the maple, ash, cottonwood, &c., on the bottom-lands near the streams. Blackberries, raspberries, gooseberries, dewberries, serviceberries, cranberries, whortleberries, strawberries, and currants, are very abundant. A species of fern is very abundant in every section of the country, and the *uva ursi* covers the ground on the margins of all the prairies. The forests and prairies abound with animals, which afford excellent amusement to the sportsman, and a principal article of food to the Indians. They are bears, elk, deer, sheep, wolves, panthers, wild-cats, foxes, hares, raccoons, squirrels, skunks, moles, wood-rats, gophers, beavers, otters, and weasels. Toads, frogs, bats, terrapins, lizards, and snakes, are very numerous. None of the snakes, I believe, are poisonous. The birds are eagles, hawks, owls, buzzards, ravens, crows, grouse (two species), jays, pigeons, robins, larks, woodpeckers, snow-birds, blackbirds, blue-birds, humming-birds, sparrows, night-hawks, swallows, martins, wrens, kingfishers, gulls, snipes, plovers, curlews, great northern-divers, and several species of ducks. During the latter part of autumn great numbers of swans, geese, cranes, and ducks, make their appearance on their way to more southern latitudes. A few spend the winter, but the greater number stop only temporarily; and are not seen again until the opening of spring, when they are returning north.

The climate of this country, as regards temperature, possesses a medium between hyperborean cold and intertropical heat. The seasons may be said to be divided into the rainy and dry. From the middle of October until the first of April is the rainy season. During this time the sky is almost constantly obscured by clouds, and rain a greater part of the time falling. During April and May there are frequent showers, after which there are occasional showers; but rain sufficient to wet the ground very seldom falls. To show the average temperature during the year, and the general characteristics of climate, I have made the following extracts from the meteorological register kept at this post during 1851:

December was the coldest month. The mean temperature as follows: sunrise, 37.67; 9 A. M., 41.55; 3 P. M., 44.9; 9 P. M., 41.29. The maximum was 52° at 3 P. M. on the 7th, and the minimum 22° at sunrise on the 22d.

August was the warmest month. The mean temperature as follows: sunrise, 55.80; 9 A. M., 66.58; 3 P. M., 77.70; 9 P. M., 64.22. The maximum was 92° at 3 P. M. on the 20th, and the minimum 46° at sunrise on the 31st.

The maximum temperature during the year was 92° at 3 P. M. on the 18th July, and the minimum 22° at sunrise on the 22d of December. During the year 39.42 inches of rain fell. The maximum quantity in one month was 15.30 inches, in January; and the minimum, 0.36 inch in July. The last frost in the spring was on the 8th April, and the first killing frost of autumn on the 11th October. Snow falls to a greater or less extent every winter, but seldom remains on the ground over two or three days. It has fallen once during the last three years to the depth of twelve inches, and remained on the ground four or five days. Ice seldom forms over half an inch thick.

The prevailing winds during the rainy season are southerly; and during the dry, northerly. Southerly winds are always indicative of rainy weather, and northerly of dry.

The country generally being high and dry, the lakes, all of pure, fresh water, no marshes or alluvial bottoms being in the vicinity, diseases of a malarious origin are almost entirely unknown. Although quite a number of cases of intermittent fever have been reported at this post, I think their origin could invariably be traced elsewhere; as those affected have either previously been accustomed to periodical attacks, or have recently been exposed to the



malarious atmosphere of the Columbia valley. Catarrhs, rheumatism, and diseases incident to exposure to cold, combined with moisture, are quite common during the rainy season.

The following is an abstract of the reports of the sick and wounded at this post from the 1st of October, 1849, to the 30th of September, 1852: Intermittent fever, 29; diseases of the respiratory organs, 82; the digestive organs, 74; brain and nervous system, 23; fibrous and muscular tissues, 39; urinary and genital organs, 104; abscesses and ulcers, 54; wounds and injuries, 46; all other diseases 49; total, 501.

The diseases of the respiratory organs have usually been catarrhs, and have required very little treatment. Two cases of phthisis pulmonalis have occurred; both were discharged. There have been a few cases of pleuritis, and one death from chronic bronchitis, contracted while on the voyage from New York. Influenza prevailed throughout the country as an epidemic in the autumn of 1851, and twelve cases occurred at this post. Among the Indians it frequently proved fatal, but with the whites the cases were light and very tractable. I have never seen a case of pneumonia north of the Columbia river. The diseases of the digestive organs have been mostly simple cases of constipation, and yielded readily to purgatives. Several cases of diarrhœa and dysentery have occurred, but none of a serious nature. Chronic rheumatism is quite common, during the rainy season, among those much exposed. The diseases of the brain and nervous system have been chiefly cephalalgia, from the derangement of the digestive organs. Diseases of the urinary and genital organs have been very frequent. The entire Indian population seem to be affected to a greater or less extent, and as the men are constantly among them very few have escaped. The great majority of cases have been gonorrhœa. Cases of syphilis have been comparatively rare, and have yielded very readily to treatment. Secondary syphilis has appeared in two individuals; one is now under treatment. Of the wounds and injuries two were fractures—one of the ribs and the other of the pelvis. One lacerated wound of the hand, caused by the premature discharge of a gun while firing a salute, rendered amputation of the fore-arm necessary. Other injuries have generally been contusions and incised wounds, occurring among the men employed in procuring wood and building houses.

There are very few white settlers in this vicinity, and, so far, there have been very few cases of sickness among them, except such as are incident to exposure during the rainy season, as catarrh, rheumatism, &c. But with the Indians the case has been far different. They seem to be passing away so rapidly before civilization, that but very few years will elapse before they are entirely extinct. Wherever the whites settle, they disappear as if there was something in civilization entirely incompatible with their existence. They say themselves, that in a few more "colds" they will all have disappeared. They seem to possess very little stamina, and when disease once takes hold of them they very soon succumb. During the summer months they are comparatively healthy, but during the winter great numbers die of dysentery and pulmonary diseases. When severely attacked at this season there is very little probability of their recovering, as they are very much exposed to the inclemency of the weather, and their diet is anything but proper, being principally dried fish and berries. Dr. Tolmie, of the Hudson Bay Company, informs me that dysentery proved very fatal in this vicinity in the autumn of 1844, and that in the winter of 1847-'48 measles prevailed throughout Oregon, and had many victims on Puget Sound. Since that time dysentery has been of annual occurrence during the autumn and winter months. Influenza prevailed as an epidemic in the autumn of 1851, and proved very fatal among some of the tribes. Syphilis and gonorrhœa prevail to a great extent among all the tribes known to the whites. All the tribes on the sound, prostitute their women without hesitation, for gain, and healthy children among them are very rare. The scrofulous diathesis is very common, and great numbers die of phthisis pulmonalis. I have known almost entire families to die of that disease within the last three years. One fruitful cause of disease among them, I think, is their manner of dressing. Very frequently an Indian may be seen one day dressed with coat, pants, two or three shirts, cap, and blanket, and, as they are all inveterate gamblers, the same Indian may be seen the next day with no other covering than a thin shirt. They do



not seem to consider boots or shoes as essential articles of clothing. They are also exceedingly uncleanly about their camps. In visiting them the olfactory nerves are assailed with the most offensive exhalations, and putrescent salmon and every sort of filthy matter is seen immediately around them.

In the treatment of disease they use a few indigenous medicinal plants, but their chief reliance is in the powers of their "medicine men," whom they believe have both the power to cause and cure disease. Almost all deaths are ascribed to the supernatural agency of some one or other of their "medicine men," who are frequently assassinated by the friends of the deceased. The "medicine men" seem to have full confidence in their "medicine," and they are generally regarded with great fear by the members of their tribe. An old practitioner in this vicinity boasts that he has had many enemies, but that his "medicine" has swept them all away.

## DISEASES.

TABLE EXHIBITING THE RATIO OF SICKNESS AND MORTALITY.

Quarters.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
				Treated.	Died.
First quarter.....	1,437	642	3	466	2
Second quarter.....	1,546	839	3	536	2
Third quarter.....	2,070	1,404	14	678	6.7
Fourth quarter.....	2,271	1,368	9	602	4
Annual ratio.....	1,831	4,253	29	2,322	15.8

The foregoing data show that the annual proportion of cases of disease to the number of officers and men in this region was 2.32 to 1, and that the ratio of deaths to men was 1 to 63.14, or 1.5 per cent. The average deaths to cases treated was 1 to 146.65, or 0.68 per cent.

## FEVERS.

Quarters. ....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
Strength .....	1,437		1,546		2,070		2,271		1,831			
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		
Febris continua communis.....	1	0	2	0	4	0	4	0	11	0	0 in 11	6
Febris intermittens quotidiana..	25	0	38	0	127	1	120	0	210	1	1 in 210	114
Febris intermittens tertiana....	30	0	30	0	122	0	91	0	273	0	0 in 273	149
Febris intermittens quartana....	5	0	0	0	5	0	12	0	22	0	0 in 22	12
Febris remittens.....	2	0	11	0	7	0	7	0	27	0	0 in 27	11.7
Febris typhus.....	0	0	0	0	6	2	0	0	6	2	1 in 3	3.3
Febris typhus icterodes .....	0	0	0	0	0	0	0	0	0	0	0 in 0	0
Total .....	63	0	81	0	271	3	234	0	549	3	1 in 183	300

The diseases of the organs connected with the digestive and respiratory systems are given in the following tables consolidated from the general abstract. No special remarks respecting particular diseases are found on the original reports of sufficient interest to note in this report.

## DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

Quarters. ....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases.		Ratio of cases per 1,000 of mean strength.
Strength .....	1,437		1,546		2,070		2,271		1,831				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Cholera Asiatica.....	0	0	0	0	0	0	0	0	0	0	0 in	0	0
Diarrhoea.....	37	0	69	0	197	1	156	0	459	1	1 in	459	250
Dysentery acuta.....	12	0	20	0	73	1	44	0	149	1	1 in	149	81.3
Dysentery chronica.....	0	0	0	1	0	1	5	0	5	2	2 in	5	2.7
Enteritis.....	0	0	0	0	0	0	0	0	0	0	0 in	0	0
Hepatitis acuta.....	0	0	1	0	0	0	1	0	2	0	0 in	2	1
Hepatitis chronica.....	0	0	0	0	0	0	0	0	0	0	0 in	0	0
Obstipatio.....	21	0	31	0	80	0	45	0	177	0	0 in	177	96.6
All other diseases of this system.....	21	0	33	0	25	0	55	0	134	0	0 in	134	73
Total .....	91	0	154	1	375	3	306	0	926	4	1 in	231	505

## DISEASES OF THE RESPIRATORY SYSTEM.

Quarters .....	FIRST.		SECOND.		THIRD.		FOURTH.		YEAR.		Proportion of deaths to cases,		Ratio of cases per 1,000 of mean strength.
Strength .....	1, 437		1, 546		2, 070		2, 271		1, 831				
Diseases.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
Bronchitis acuta et chronica..	14	1	2	0	5	0	10	0	31	1	1 in	31	17
Catarrhus.....	70	0	73	0	84	0	101	0	338	0	0 in	338	184
Phthisis pulmonalis.....	0	1	0	1	4	0	2	0	6	2	1 in	3	3.2
Pleuritis .....	12	0	1	0	5	0	5	0	23	0	0 in	23	12.5
Pneumonia .....	0	0	2	0	4	2	2	1	8	3	1 in	3	4.3
All other diseases of this system .....	2	0	4	0	0	0	2	0	8	0	0 in	8	4.3
Total .....	98	2	82	1	102	2	122	1	414	6	1 in	82	226
Rheumatismus .....	39	0	62	0	52	0	69	0	222	0	0 in	222	121

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ABSTRACTS  
OF THE  
PRINCIPAL DISEASES AND DEATHS  
AMONG  
THE TROOPS IN OREGON AND WASHINGTON TERRITORIES;  
AND  
CONSOLIDATED ABSTRACTS  
OF THE  
DISEASES AND DEATHS  
IN  
THE ARMY OF THE UNITED STATES.

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## REPORT ON THE SICKNESS AND MORTALITY AMONG THE

## ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG

CLASSES OF DISEASES.	FIRST QUARTER.												AGGREGATE STRENGTH.	
	YEARS .....	1849.	1850.	1851.	1852.	1853.	1854.							
	MEAN STRENGTH .....		244.	125	110.	381.	277.	1,437.						
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
Fever.	Febris continua communis .....		1									1		
	Febris inter. quotidiana .....	5		1		1		4		11		25		
	Febris intermitt. tertiana .....	6		3		4		14		3		30		
	Febris intermittens quotidiana .....					2				3		5		
	Febris remittens .....					1		1				2		
Eruptive fevers.	Febris typhus .....													
	Erysipelas .....													
	Rubella .....													
	Scarlatina .....													
	Cholera Asiatica .....													
Diseases of the organs connected with the digestive system.	Diarrhoea .....	7		11		5		4		10		37		
	Dysentery acuta .....	2		1				9				12		
	Dysentery chronica .....													
	Enteritis .....													
	Hepatitis acuta .....													
Diseases of the respiratory system.	Hepatitis chronica .....													
	Obstipatio .....	10		4				2		5		21		
	All other diseases .....			7		2		9		3		21		
	Bronchitis, acuta et chronica .....	1	1	2		5		1		5		14	1	
	Catarrhus .....	18		20				22		10		70		
Diseases of the brain and nervous system.	Phthisis pulmonalis .....							1					1	
	Pleuritis .....	7						2		3		12		
	Pneumonia .....													
	All other diseases .....	1								1		2		
	Cephalalgia .....	4		1		1		3				9		
Diseases of the urinary and genital organs.	Delirium tremens .....			2								2		
	Epilepsia .....			1								1		
	Neuralgia .....	1						2				3		
	All other diseases .....													
	Gonorrhoea .....	24		23		3		2		1		53		
Diseases of the serous and exhalant vessels.	Stricture urethrae .....									5		5		
	Syphilis primitiva .....	4		10		1						15		
	Syphilis consecutiva .....	2		2		2						6		
	All other diseases .....	10		5		1		2		1		19		
	Venae .....													
Diseases of the fibrous & muscular structures.	All other diseases .....			1						1		2		
	Pernio .....							3		2		5		
	Polypus .....													
	Rheumatismus .....	8		9		4		6		12		39		
	Fistula .....													
Abscesses and ulcers.	Phlegmon et abscessus .....	11		10		3		15		13		52		
	Ulcus .....	2		5				1		3		16		
	Ambustio .....	1		2						1	1	4	1	
	Amputatio .....					1						1		
	Contusio .....	8		3				10		9		30		
Wounds and injuries.	Fractura .....							1				1		
	Luxatio .....													
	Pinatio .....	1										1		
	Subluxatio .....			3				2		9		14		
	Vulnus metastum .....	3		10		1		6		5		25		
Morbidities.	Vulnus laceratum .....	1						2		9		12		
	Vulnus punctum .....			2				1		1		4		
	Vulnus scopulorum .....									1		1		
	Debitus .....					2		2		1		5		
	Fibrinosis .....							1				1		
Morbidities.	Hæmorrhoids .....	1				2				2		5		
	Hæmaturia .....													
	Melæuria .....													
	Melæribia .....	9		1		2		2		3		15		
	Sanguis .....							3				3		
All other diseases .....		6		1		6		13		14		43		
Total .....			153	1	145	49		148	2	147		642	3	

## THE TROOPS AT POSTS IN OREGON AND WASHINGTON TERRITORIES.

CLASSES OF DISEASES.	SECOND QUARTER.												AGGREGATE STRENGTH.	
	YEARS.....	1849.	1850.	1851.	1852.	1853.	1854.							
	MEAN STRENGTH.....	241.	469.	129.	120.	287.	290.	1,546.						
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
Fevers.....	Febris continua communis.....		1							1		2		
	Febris inter. quotidiana.....	1		5		3				29		38		
	Febris intermittens tertiana.....	5		5		11		6		3		30		
	Febris inter. atroph. quartana.....													
	Febris remittens.....		10				1					11		
Eruptive fevers.....	Febris typhus.....													
	Erysipelas.....													
	Rubeola.....													
	Scarlatina.....													
	Cholera Asiatica.....													
Diseases of the organs connected with the digestive system.	Diarrhoea.....	10	28	3	2	6	20	69						
	Dysenteria acuta.....	3	5	1		10	1	20						
	Dysenteria chronica.....			1									1	
	Enteritis.....													
	Hepatitis acuta.....		1									1		
Diseases of the respiratory system.	Hepatitis chronica.....													
	Obstipatio.....	14	8	4		3	2	31						
	All other diseases.....	18	3		3	2	7	33						
	Bronchitis, acuta et chronica.....		1				1	2						
	Catarrhus.....	16	26	9	2	10	10	73						
Diseases of the brain and nervous system.	Phthisis pulmonaris.....		1										1	
	Pleuritis.....		1									1		
	Pneumonia.....	1					1	2						
	All other diseases.....		1	3				4						
	Cephalalgia.....	3	3		3	4	2	15						
Diseases of the urinary and genital organs.	Delirium tremens.....		3					3						
	Epilepsia.....		4				2	6						
	Neuralgia.....													
	All other diseases.....	1			1			2						
	Gonorrhoea.....	5	30	4		13	9	57						
Diseases of the serous and exhalant vessels.	Stricture urethrae.....		2					2						
	Syphilis primaria.....	3	5	5	1		4	18						
	Syphilis secundaria.....	1	15	2				18						
	All other diseases.....	2	16	3	2	1	2	27						
	Ascaris.....													
Diseases of the fibrous & muscular structures.	All other diseases.....				2			2						
	Peritonitis.....		1					1						
	Podagra.....													
	Rheumatismus.....	5	20	9	4	11	13	69						
	Fistula.....			1				1						
Abscesses and ulcers.....	Phlegmon et abscessus.....	10	16	4	5	21	9	59						
	Ulcus.....	1	9	2		3		10						
	Amputatio.....	1	2			1	3	7						
	Amputatio.....													
	Contusio.....	2	10	5	1	14	14	37						
Wounds and injuries.....	Fractura.....				1			1						
	Luxatio.....						1	1						
	Punctura.....													
	Subluxatio.....			2	3	3	1	8						
	Vulnus incisum.....		8		2		6	16						
Miscellaneous.....	Vulnus laceratum.....		1			2	2	13						
	Vulnus punctum.....	1	1				2	5						
	Vulnus scissum.....													
	Delirias.....		1		1		1	3						
	Ebricitas.....			2				2						
Miscellaneous.....	Hemiplegia.....	1	1		1		1	4						
	Hemiplegia.....		3	1				4						
	Melancholia.....		3					3						
	Melancholia.....	1	5	1		2	2	11						
	Schizophrenia.....	2	1				2	6						
All other diseases.....		2	8	2		1	5	14						
Total.....		114	253	2	58	59	141	1	191	850	3			

## REPORT ON THE SICKNESS AND MORTALITY AMONG THE

## ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS OCCURRING AMONG

CLASSES OF DISEASES.	YEARS .....	THIRD QUARTER.												AGGREGATE STRENGTH.	
		1849.		1850.		1851.		1852.		1853.		1854.			
		MEAN STRENGTH .....		754.	421.	79.	191.	292.	333.	2,070.					
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
Fevers .....	Febris continua communis..	1						1				2		4	
	Febris inter. quotidiana....	26	1	12		1		5				83		127	1
	Febris intermittens tertiana.	25		30				5		23		39		122	
	Febris intermittens quartana	4										1		5	
	Febris remittens .....	2						2				3		7	
Eruptive fevers .....	Febris typhus .....	5	2	1										6	
	Erysipelas .....														
	Rubeola .....	1												1	
	Scarlatina .....														
Diseases of the organs connected with the digestive system.	Cholera Asiatica .....														
	Diarrhoea .....	80	1	45				4		36		32		197	1
	Dysentery acuta .....	18		6	1			24		9		16		73	1
	Dysentery chronica .....		1												1
	Enteritis .....														
	Hepatitis acuta .....														
	Hepatitis chronica .....														
Diseases of the respiratory system.	Obstipatio .....	25		31		3		1		14		6		80	
	All other diseases .....	4		5		1		1		11		3		25	
	Bronchitis, acuta et chronica	1						2				2		5	
	Catarrhus .....	16		21		18		3		23		3		84	
	Phthisis pulmonalis .....							1				3		4	
	Pleuritis .....					1				1		3		5	
	Pneumonia .....	3	2									1		4	2
Diseases of the brain and nervous system.	All other diseases .....														
	Cephalalgia .....	5		3		3		1		8		2		22	
	Delirium tremens .....					1		1				1		3	
	Epilepsia .....	3		3								2		8	
	Neuralgia .....	2		1										3	
Diseases of the urinary and genital organs.	All other diseases .....			1	1							1		2	1
	Gonorrhoea .....	5		32		4		4		7		13		65	
	Stricture urethrae .....	3		1										4	
	Syphilis primitiva .....	4		16		3		1		4		6		34	
	Syphilis consecutiva .....	5						2						7	
Diseases of the serous and exhalant vessels.	All other diseases .....	5		9		3		2				3		22	
	Ascites .....														
Diseases of the fibrous & muscular structures.	All other diseases .....														
	Permo .....														
	Podagra .....														
Abscesses and ulcers....	Rheumatismus .....	16		15		3		3		9		6		52	
	Fistula .....	1												1	
	Phlegmon et abscessus .....	33		12		1		3		18		17		84	
	Ulcus .....	4		10				1		11		1		27	
	Ambrosio .....	2		2										4	
	Amputatio .....							1		1				2	
	Contusio .....	14		21		5		4		18		14		76	
Wounds and injuries....	Fractura .....			3				2				2		7	
	Luxatio .....					1								1	
	Punio .....														
	Sub luxatio .....	1		1						7		11		20	
	Vulnus incisum .....	9		19		1		2		8		9		48	
	Vulnus laceratum .....									8		4		12	
	Vulnus punctum .....			4						2		5		11	
Miscellaneous .....	Vulnus sclopeticum .....	1	1					2				1		4	1
	Debilitas .....			1				2		3		6		12	
	Ebrietas .....	2						1		7		8		18	
	Hæmorrhoids .....			4						1		1		6	
	Hernia .....											2		2	
	Morbi cutis .....	2		3				2		1				8	
	Morbi oculi .....	3		7		1				6		3		20	
	Scorbutus .....	9												9	
	All other diseases .....	17	4	2		1		7		12		22		61	4
	Total .....		357	12	321	2	51		90		248		337		1,404



## THE TROOPS AT POSTS IN OREGON AND WASHINGTON TERRITORIES.

CLASSES OF DISEASES.	YEARS .....	FOURTH QUARTER.												AGGREGATE STRENGTH.	
		1849.	1850.	1851.	1852.	1853.	1854.								
		MEAN STRENGTH .....	546.	415.	240.	426.	300.	344.							2,271.
SPECIFIC DISEASES.		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
Fevers .....	Febris continua communis..			3		1								4	
	Febris inter. quotidiana ....	13	6	39	11	19	32							120	
	Febris intermittens tertiana.	7	8	5	16	31	24							91	
	Febris intermittens quartana	3			6	2	1							12	
	Febris remittens.....	2			2	3								7	
Eruptive fevers .....	Febris typhus.....														
	Erysipelas.....		5											5	
	Rubeola.....														
	Scarlatina.....														
Diseases of the organs connected with the digestive system.	Cholera Asiatica.....														
	Diarrhœa.....	44	25	12	37	16	22							156	
	Dysenteria acuta.....	8	1	3	19	1	12							44	
	Dysenteria chronica.....	4				1								5	
	Enteritis.....														
	Hepatitis acuta.....					1								1	
	Hepatitis chronica.....														
	Obstipatio.....	15	14		1	11	4							45	
Diseases of the respiratory system.	All other diseases.....	9	18	7	9	5	7							55	
	Bronchitis, acuta et chronica	1	1		2	6								10	
	Catarrhus.....	21	24		37	11	8							101	
	Phthisis pulmonalis.....		1				1							2	
	Pleuritis.....	2			1	1	1							5	
	Pneumonia.....	2	1											2	1
Diseases of the brain and nervous system.	All other diseases.....		1				1							2	
	Cephalalgia.....	10	1	2	4	1	2							20	
	Delirium tremens.....	1	2			2	1							5	
	Epilepsia.....	1	3	1	1									6	
	Neuralgia.....	1												1	
Diseases of the urinary and genital organs.	All other diseases.....			1		1	2							4	
	Gonorrhœa.....	21	21	4		1	16							63	
	Stricture urethræ.....	2												2	
	Syphilis primitiva.....	21	17		1	3	9							51	
	Syphilis consecutiva.....	2	1	2	1		1							6	2
Diseases of the serous and exhalent vessels.	All other diseases.....	9	6	3	2		2							22	
	Ascites.....														
	All other diseases.....														
Diseases of the fibrous & muscular structures.	Pernio.....				1	1								2	
	Podagra.....														
	Rheumatismus.....	19	10	6	10	17	7							69	
Abscesses and ulcers.....	Fistula.....	2												2	
	Phlegmon et abscessus.....	23	20	9	11	19	16							98	
	Ulcus.....	9	5	3	3	2	1							23	
	Ambustio.....	2	6		5	1	2							15	1
Wounds and injuries.....	Amputatio.....														
	Contusio.....	15	22	5	9	16	12							79	
	Fractura.....			1	1									1	1
	Luxatio.....		3											3	
	Punctio.....														
	Sub luxatio.....	2	2	1	4		6							15	
	Vulnus incisum.....	9	11	2	2	8	3							35	
	Vulnus laceratum.....	2		1	1	9	3							16	
Miscellaneous .....	Vulnus punctum.....		1		2	1	1							5	
	Vulnus sclopeticum.....				1	2								3	
	Debilitas.....		1	1	9	3								14	
	Ebrietas.....				2	8	1	9						19	1
	Hæmorrhœis.....	3	3			4								10	
	Hernia.....	1	2		1		1							5	
	Morbi cutis.....	2	4	1	2									9	
	Morbi oculi.....	2	5		1	2	2							12	
Total .....	Scorbutus.....	6	2											6	2
	All other diseases.....	15	5	8	20	17	15							80	
	Total .....	311	1	256	1	118	1	244	1	226	2	223		1,368	9

## CONSOLIDATED ABSTRACT OF THE PRINCIPAL DISEASES AND

CLASSES OF DISEASES.	ALL AGES.	1840.		1841.		1842.		1843.		1844.	
		Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
	ALL AGES.	10,116.		9,748.		10,000.		9,863.		8,570.	
	SPECIFIC DISEASES.										
Fever.	Febus congestiva.			21		12		4			
	Febus contagiosa infantilis.	167	2	310	2	131	2	69	1	134	
	Febus intermittens quotidian.	3,055	6	4,843	5	4,468	2	2,747	2	2,250	
	Febus intermittens tertiana.	2,869		4,427	2	3,933		2,445		1,836	
	Febus intermittens quartana.	111		157		80		29	1	100	
	Febus remittens.	1,176	46	2,509	43	944	14	530	23	431	12
	Febus typhus.	16	11	47	10	31	7	11	2	8	
Eruptive fevers.	Febus typhus reberodes.	10	10	29	6	63	28	35	12	13	11
	Erysipelas.	61	1	50	1	50	2	34		22	
	Rubeola.	25		31		16		5		31	
	Scarlatina.	9		2				1		14	
	Varicella.	2				4	1				
Diseases of the organs connected with the digestive system.	Varicellæ.	2				13	1	3		1	
	Cholera Asiatica.										
	Cholera morbus.	141		210	1	285	3	163		185	1
	Colica.	200		445		400		371		384	
	Constipatio.	601		1,062	1	988	1	616		607	
	Diarrhœa.	2,947	17	3,454	44	3,354	26	2,291	9	1,627	6
	Dysenteria acuta.	1,779	23	2,634	38	2,000	12	907	3	612	3
	Dysenteria chronica.	81	7	391	55	409	72	160	15	21	1
	Dyspepsia.	192		152		98		100		149	
	Enteritis.		12					11		14	1
	Gastritis.	139	5	113	1	63	3	54	1	76	2
	Hæmatæmesis.	8		2		2		3		4	1
	Hepatitis acuta.	28	2	27		17		19		10	
	Hepatitis chronica.	34	2	23	1	15		15	3	19	2
	Icterus.	35	1	47		48		37		15	
	Pancreatitis.	14		33				10		30	
	Pentontitis.	62	2	22	7	9	2	6	1		
	Splenitis.	19		28		20		10		8	
	Tonsillitis.	226	1	251		246		221	1	184	1
Diseases of the respiratory system.	Asthma.	10	1	24		17		13		18	
	Bronchitis acuta.	101		119	7	75	1	82		77	1
	Bronchitis chronica.							8	2	9	
	Catarrhus epiglottidis.					197		1,348		117	
	Catarrhus.	2,268		2,778	3	3,263		3,795	3	2,301	1
	Hæmoptyses.	28		29	3	27	2	15		23	1
	Laryngitis.	18	1	26		9		28	1	7	
	Phthisis pulmonalis.	41	30	44	58	33	28	31	26	20	19
	Pleuritis.	222		210	4	292	1	237	4	167	2
Diseases of the circulatory system.	Pneumonia.	132	7	139	12	113	10	132	11	79	5
	Anthrax.			1		2	1				
	Angina pectoris.	3				1		1		3	
	Carditis.									1	1
	Endocarditis.										
	Pericarditis.	3	2	2	1	5	3	13	2	7	
Diseases of the brain and nervous system.	Vaux.	5		7		9		10		8	
	Apoplexia.	4	3	10	7	5	7	11	4	8	1
	Cephalalgia.	550		568		488		440		711	
	Cerebritis.										
	Chorea.	4		3				1			
	Delirium tremens.	161	5	150	3	124	7	156	11	130	8
	Epilepsia.	95	2	112		85	2	82	1	40	1
	Fetus solus.										
	Mania.	28		29	1	17		8		11	
	Melancholia.							1		5	

## DEATHS OCCURRING IN THE ARMY OF THE UNITED STATES.

1845.		1846.		1849.		1850.		1851.		1852.		1853.		1854.		AGGREGATE STRENGTH.		
8,590.		9,083.		9,148.		8,970.		9,242.		9,203.		9,994.		8,095.		120,622.		
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.	
																		37
94	189	6	216	4	119	2	151	2	412	1	85	1	130	.....	2,207	23		
1,992	2,217	3	897	.....	1,910	.....	1,992	2	2,941	.....	4,643	1	3,001	1	36,956	22		
1,572	1,690	.....	949	1	1,775	2	2,385	.....	2,069	.....	3,151	.....	2,815	.....	31,916	.....		
61	64	.....	159	.....	161	.....	99	.....	124	.....	69	.....	68	1	1,282	2		
298	5	522	12	538	23	732	7	1,014	5	603	9	657	5	345	6	10,299	210	
2	1	22	3	117	17	57	12	68	13	90	15	46	16	42	11	557	118	
.....		.....		135	52	5	3	1	.....	3	.....	34	4	340	83	723	209	
33	13	1	61	1	65	5	70	1	32	.....	30	2	19	.....	545	14		
12	31	.....	18	1	2	.....	4	.....	17	.....	5	.....	3	.....	203	1		
31	1	.....	1	.....	.....	.....	2	.....	2	.....	4	.....	.....	.....	67	.....		
.....		.....		43	8	12	.....	5	3	6	2	4	.....	9	.....	85	14	
1	5	.....	23	.....	8	.....	6	1	5	.....	9	.....	12	.....	68	2		
.....		.....		616	307	283	60	382	91	130	26	186	94	31	18	1,628	596	
160	160	1	88	4	135	5	150	1	146	.....	124	.....	78	4	2,025	20		
378	1	488	.....	409	.....	281	1	297	.....	348	.....	374	.....	322	.....	4,757	2	
835	976	.....	830	.....	738	.....	788	.....	773	.....	850	.....	918	.....	10,582	2		
2,323	2	4,568	25	7,065	151	4,028	31	3,231	24	3,265	21	2,976	17	2,605	12	43,851	385	
689	6	1,713	5	677	20	727	15	685	13	913	18	836	8	709	4	15,081	168	
34	70	33	163	9	73	18	131	23	59	14	80	22	67	7	1,739	276		
197	132	.....	166	.....	178	1	114	.....	132	.....	144	.....	87	.....	1,841	1		
24	2	26	6	37	1	31	8	39	6	11	.....	16	.....	21	2	230	38	
71	2	43	.....	64	1	47	.....	59	1	62	.....	61	3	53	2	905	21	
3	3	1	5	.....	3	.....	4	.....	7	.....	3	1	8	.....	55	3		
16	10	.....	40	1	18	1	29	2	21	.....	19	.....	14	1	263	7		
18	8	3	39	1	11	2	7	.....	6	.....	8	.....	7	.....	210	14		
13	39	2	35	.....	21	.....	22	.....	27	1	20	.....	10	.....	369	4		
45	17	1	49	.....	36	.....	35	.....	32	.....	32	.....	11	.....	344	1		
7	7	3	11	1	12	.....	10	1	4	3	8	1	15	3	193	24		
16	9	.....	5	.....	5	1	6	.....	6	.....	6	.....	7	.....	145	1		
234	256	.....	325	.....	238	1	265	.....	183	.....	232	.....	187	.....	3,048	4		
14	12	.....	44	.....	37	.....	27	1	23	.....	34	.....	18	.....	291	2		
52	101	1	139	3	107	1	163	2	167	.....	157	2	274	.....	1,614	21		
15	1	31	2	50	.....	30	3	14	1	22	.....	35	1	32	4	246	14	
10	158	.....	51	.....	.....	.....	19	.....	69	.....	149	.....	24	.....	2,142	.....		
2,464	1	2,296	.....	2,323	.....	1,525	.....	1,746	.....	2,089	.....	2,264	1	1,857	.....	30,969	9	
18	11	2	18	.....	18	1	14	.....	16	.....	25	.....	23	2	265	11		
6	1	9	1	10	.....	12	.....	11	.....	17	2	25	.....	6	.....	184	6	
31	8	38	9	40	18	30	14	35	12	23	20	29	21	27	14	442	257	
167	130	.....	166	2	194	2	176	4	198	1	185	1	109	.....	2,363	21		
75	7	78	11	170	10	133	14	111	9	100	12	92	13	62	6	1,416	127	
.....		.....		1	1	1	.....	2	.....	1	1	.....	1	.....	.....	8	4	
1	1	1	1	6	.....	3	.....	5	.....	4	.....	18	.....	9	.....	55	2	
1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22	2	
.....		.....		2	5	.....	2	.....	7	1	5	1	2	2	6	.....	39	12
6	15	.....	13	.....	16	.....	6	.....	11	.....	16	.....	20	.....	142	.....		
4	1	4	1	14	6	3	3	10	7	9	6	11	2	8	5	93	53	
777	822	.....	489	.....	484	.....	338	.....	367	.....	349	.....	306	.....	6,699	.....		
.....		.....		1	.....	.....	.....	.....	1	1	.....	1	.....	1	1	2	4	
.....		.....		2	.....	1	.....	1	.....	2	.....	4	.....	2	.....	20	.....	
154	7	80	6	137	10	119	6	137	13	110	5	140	6	101	11	1,699	98	
48	40	1	50	4	69	1	76	.....	95	.....	71	1	29	.....	894	13		
4	4	4	3	2	1	1	.....	6	1	5	.....	1	.....	7	.....	30	9	
10	4	4	.....	12	3	9	1	9	.....	11	.....	14	.....	20	1	182	6	
2	4	.....	.....	.....	7	.....	9	.....	3	.....	10	.....	6	.....	47	.....		





OCCURRING IN THE ARMY OF THE UNITED STATES—Continued.

1845.		1846.		1849.		1850.		1851.		1852.		1853.		1854.		AGGREGATE STRENGTH.	
8,590.		9,083.		9,148.		8,970.		9,242.		9,203.		9,994.		8,095.		120,622.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
2	1	4	1	5	3	3	3	9	5	5	.....	5	1	3	1	49	21
61	1	48	.....	76	.....	81	.....	82	1	100	.....	105	.....	115	.....	889	3
7	.....	7	1	26	2	12	1	20	2	21	.....	19	2	6	.....	187	11
1	1	1	.....	3	.....	.....	.....	1	.....	3	.....	1	.....	2	2	17	7
.....	.....	5	.....	2	.....	5	.....	1	.....	7	.....	3	.....	4	.....	33	.....
4	.....	5	.....	5	.....	3	.....	10	.....	8	1	15	1	5	.....	72	3
4	.....	.....	.....	8	.....	.....	.....	3	.....	.....	.....	2	.....	4	.....	59	.....
9	.....	7	.....	5	.....	6	.....	5	.....	9	.....	7	.....	2	.....	85	.....
421	.....	339	.....	737	.....	438	.....	447	.....	370	.....	356	.....	262	.....	5,547	.....
32	.....	16	.....	32	.....	22	.....	8	.....	17	.....	21	1	17	1	271	2
9	.....	4	.....	8	1	9	1	9	.....	6	.....	10	.....	9	.....	104	5
83	.....	54	.....	105	.....	89	.....	103	.....	74	.....	74	.....	78	.....	1,017	1
.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	.....
16	.....	11	.....	25	.....	18	.....	37	.....	16	.....	23	.....	17	.....	234	.....
261	.....	184	.....	572	.....	255	.....	257	.....	176	.....	117	.....	132	.....	2,883	2
69	.....	60	2	153	1	111	1	96	2	140	1	148	1	138	.....	1,163	11
16	.....	9	.....	17	.....	23	.....	22	.....	17	.....	6	.....	7	.....	166	.....
10	2	6	1	37	2	20	3	11	.....	15	.....	14	2	14	1	237	18
5	2	2	2	14	2	10	.....	5	3	8	4	5	5	4	2	115	30
1	.....	.....	.....	.....	.....	1	.....	2	.....	1	.....	.....	.....	.....	.....	5	.....
5	.....	1	.....	7	.....	2	.....	2	.....	4	.....	1	.....	3	.....	31	.....
1	1	1	.....	7	4	6	2	1	3	3	1	.....	.....	.....	.....	29	21
12	.....	6	.....	3	.....	1	.....	3	.....	5	.....	5	.....	5	.....	70	.....
738	.....	547	.....	910	6	628	1	648	1	588	1	711	.....	560	1	8,792	12
200	.....	328	1	480	.....	325	3	341	3	292	.....	270	1	292	1	4,265	14
10	.....	15	.....	14	.....	8	.....	17	.....	20	.....	22	.....	22	.....	197	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	304	.....
929	.....	918	1	1,053	1	1,463	1	1,595	.....	1,444	1	1,767	3	1,471	.....	14,802	12
379	.....	720	.....	574	.....	509	2	474	.....	477	.....	501	1	481	.....	6,541	5
101	.....	116	.....	76	.....	95	.....	103	.....	135	.....	99	2	86	1	1,315	4
4	.....	9	3	12	2	9	.....	9	1	7	2	25	2	14	1	124	14
1,291	.....	1,129	.....	1,143	1	1,191	1	1,414	.....	1,362	2	1,566	1	1,549	.....	16,676	10
51	2	41	1	90	5	65	2	74	4	66	2	74	.....	69	1	825	21
60	.....	36	.....	81	.....	49	.....	40	.....	43	.....	38	.....	39	.....	700	.....
31	.....	29	.....	45	.....	44	.....	51	.....	63	.....	72	.....	59	.....	631	1
1	.....	7	.....	2	.....	2	.....	5	.....	9	1	6	1	12	.....	65	2
10	.....	28	.....	17	.....	15	.....	18	.....	7	.....	6	.....	4	.....	218	.....
490	.....	468	.....	296	.....	371	.....	391	1	331	.....	472	.....	484	.....	4,881	1
419	1	391	2	396	1	514	4	435	1	418	1	445	.....	402	.....	6,659	14
100	1	101	.....	146	.....	177	1	239	1	219	1	245	1	234	1	1,605	6
70	.....	82	1	83	.....	79	5	127	6	99	1	98	1	93	4	1,081	20
18	2	443	64	75	4	67	13	50	5	53	11	47	5	90	26	1,233	161
1	.....	9	.....	6	.....	17	.....	5	.....	5	.....	3	.....	5	.....	73	.....
.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....
37	.....	47	.....	21	.....	12	.....	15	.....	17	.....	23	.....	32	.....	394	.....
321	.....	320	.....	317	.....	318	.....	321	.....	383	.....	425	.....	293	.....	5,678	1
2	.....	30	2	8	.....	12	.....	9	.....	12	1	4	.....	12	.....	114	3
.....	.....	.....	.....	1	4	2	.....	.....	.....	1	.....	4	.....	3	.....	8	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	7	6
2	.....	7	.....	5	.....	15	.....	13	.....	7	.....	6	.....	16	.....	243	.....
107	.....	200	.....	238	5	132	1	199	.....	176	2	159	2	144	2	2,352	16
577	4	311	4	218	5	244	4	233	2	284	6	323	1	331	2	3,830	53
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28	1
.....	.....	2	.....	2	.....	3	.....	1	.....	.....	.....	.....	.....	1	.....	22	.....

## REPORT ON THE SICKNESS AND MORTALITY

## CONSOLIDATED ABSTRACT OF THE PRINCIPAL DISEASES AND DEATHS

CLASSES OF DISEASES.	YEARS .....	1840.		1841.		1842.		1843.		1844.	
	MEAN STRENGTH .....	10,116.		9,748.		10,000.		9,636.		8,570.	
	SPECIFIC DISEASES.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.
All other diseases.....	Hæmorrhoids .....	168	.....	160	1	164	.....	182	.....	120	.....
	Morbi cutis.....	87	.....	181	.....	165	.....	66	.....	90	.....
	Necrosis.....	1	.....	5	.....	1	.....	2	.....	.....	.....
	Nostalgia.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....
	Odontalgia.....	39	.....	.....	.....	.....	.....	162	.....	208	.....
	Otalgia et otitis.....	68	.....	95	.....	44	.....	59	.....	78	.....
	Perno.....	150	.....	135	1	27	1	86	.....	21	.....
	Prolapsus ani.....	10	.....	5	.....	6	.....	7	.....	3	.....
	Scirrhus.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....
	Scorbutus.....	63	1	104	3	56	1	32	1	16	.....
	Serofula.....	19	.....	19	.....	12	.....	8	.....	9	1
	Scurdum.....	.....	.....	.....	.....	.....	.....	1	1	2	2
	Toxicum.....	10	.....	.....	.....	.....	.....	41	.....	27	.....
	Tumores.....	20	.....	82	.....	98	.....	.....	.....	.....	.....
	Verues.....	9	.....	16	.....	5	.....	4	.....	9	.....
	Morbi vari.....	2,873	12	2,996	14	2,369	15	1,624	1	1,330	3
	Total.....	28,167	254	37,499	387	32,426	303	26,820	160	20,982	96

The form of "report of sick" in use in 1839 was far less minute in its details, and differed so essentially from those subsequently adopted, that it was not practicable to represent the statistics for that year in this abstract.

The statistics for 1847 and 1848 (war with Mexico) are also excluded, it having been found impossible to collate correct statistics for those years.

The deaths reported from "febris congestiva" are to be regarded as congestive terminations of intermittent fever, under which head the cases were originally registered. The term congestive fever is retained in preference to pernicious intermittent fever, because it is universally employed by the medical officers in that sense, as it is also throughout the southern and south-western States.

Cases of "paronychia," subsequent to 1843, have been so generally reported under "phlegmon et abscessus," that it was determined to include all under that head.



OCCURRING IN THE ARMY OF THE UNITED STATES—Continued.

1843.		1846.		1849.		1850.		1851.		1852.		1853.		1854.		AGGREGATE STRENGTH.	
8,590.		9,083.		9,148.		8,970.		9,242.		9,203.		9,994.		8,095.		120,622.	
Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Cases.	Died.	Total cases.	Total died.
138	.....	140	.....	183	.....	112	.....	129	.....	171	.....	161	.....	123	1	1,951	2
121	.....	130	.....	102	.....	135	.....	113	.....	198	.....	238	.....	178	.....	1,804	.....
1	.....	1	.....	1	.....	.....	.....	3	.....	.....	.....	3	.....	1	.....	19	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....
271	.....	289	.....	152	.....	194	.....	171	.....	211	.....	248	.....	221	.....	2,166	.....
59	1	77	.....	79	.....	91	.....	94	.....	57	.....	100	.....	100	.....	1,001	1
12	.....	8	.....	120	.....	31	.....	45	.....	66	1	53	.....	58	.....	812	3
.....	.....	3	.....	2	.....	2	.....	9	.....	2	.....	1	.....	2	.....	52	.....
.....	.....	.....	.....	2	1	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	6	2
13	.....	150	.....	135	2	283	9	376	8	364	12	345	2	195	1	2,132	40
5	.....	11	.....	19	.....	18	.....	26	1	10	1	13	.....	6	.....	175	3
1	1	3	2	1	1	3	2	2	1	1	2	4	5	1	2	19	19
17	.....	21	.....	21	.....	35	.....	32	.....	51	.....	65	1	25	2	345	3
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	200	.....
6	.....	4	.....	10	.....	14	.....	19	.....	12	.....	19	.....	19	.....	146	.....
1,856	7	1,621	15	1,507	19	1,168	13	1,303	8	1,279	15	1,612	9	1,403	5	22,941	136
22,496	78	26,689	246	28,013	734	24,079	294	25,276	299	25,765	229	29,575	279	24,998	258	352,685	3,617

This abstract shows that the average annual proportion of cases of disease to the numerical strength of the army is 2.92 to 1; that the corresponding ratio of deaths is 1 in 33.35, or 2.99 per cent.; and that the proportion of deaths to cases is 1 in 97, or 1.02 per cent.

Exclusive of cholera, the deaths were 1 in 38.64, or 2.58 per cent.

It is probable that even this last, is greater than the actual annual ratio of mortality, as the excess of deaths in 1849 is in part attributable to diseases contracted during the war.

*Consolidated table exhibiting the amount and annual ratio of sickness and mortality for each region.*

No.	Regions.	Mean strength.	Number treated.	Deaths.	RATIO PER 1,000 OF MEAN STRENGTH.	
					Treated.	Died.
1	Coast of New England .....	3,963	6,935	36	1,749	9.0
2	Harbor of New York .....	9,387	31,397	183	3,345	19.5
3	West Point .....	6,901	31,635	28	4,584	4.0
4	North Interior, East .....	3,553	6,426	39	1,808	10.9
5	The Great Lakes .....	10,346	22,784	140	2,202	13.5
6	North Interior, West .....	7,230	16,707	77	2,310	10.6
7	Middle Atlantic .....	6,299	14,262	117	2,264	18.5
8	Middle Interior, East .....	2,456	6,373	36	2,594	14.6
9	Newport Barracks, Kentucky .....	1,454	3,670	59	2,524	40.5
10	Jefferson Barracks and St. Louis Arsenal .....	5,580	19,587	263	3,510	47.0
11	Middle Interior, West .....	5,319	20,804	107	3,911	20.0
12	South Atlantic .....	2,800	6,870	58	2,453	20.7
13	South Interior, East .....	5,919	17,426	234	2,944	39.5
14	South Interior, West .....	10,013	35,312	228	3,531	22.7
15	Atlantic Coast of Florida .....	835	2,408	21	2,883	25.0
16	Gulf Coast of Florida .....	2,299	10,262	70	4,463	30.4
17	Texas, Southern Frontier .....	4,450	15,693	235	3,526	52.8
18	Texas, Western Frontier .....	6,324	23,051	174	3,645	27.5
19	New Mexico .....	5,873	11,738	139	1,999	23.6
20	California, Southern .....	1,707	3,200	30	1,874	17.5
21	California, Northern .....	1,599	5,420	70	3,389	43.7
22	Oregon and Washington .....	1,831	4,253	29	2,322	15.8

*Consolidated table exhibiting the amount and annual ratio of sickness and mortality in each region, from fevers.*

No.	Regions.	Mean strength.	Number treated.	Deaths.	Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
1	Coast of New England .....	3,963	454	2	1 in 227	114
2	Harbor of New York .....	9,387	2,134	25	1 in 85	227
3	West Point .....	6,901	985	3	1 in 328	142
4	North Interior, East .....	3,553	384	3	1 in 128	108
5	The Great Lakes .....	10,346	3,458	22	1 in 157	334
6	North Interior, West .....	7,230	2,926	7	1 in 418	407
7	Middle Atlantic .....	6,299	2,163	41	1 in 53	343
8	Middle Interior, East .....	2,456	599	7	1 in 85	243
9	Newport Barracks, Kentucky .....	1,454	944	9	1 in 105	649
10	Jefferson Barracks and St. Louis Arsenal .....	5,580	5,138	51	1 in 100	920
11	Middle Interior, West .....	5,319	5,783	12	1 in 482	1087
12	South Atlantic .....	2,800	825	15	1 in 75	294
13	South Interior, East .....	5,919	3,746	85	1 in 44	633
14	South Interior, West .....	10,013	14,121	36	1 in 392	1412
15	Atlantic Coast of Florida .....	835	551	12	1 in 46	659
16	Gulf Coast of Florida .....	2,299	5,095	28	1 in 182	2216
17	Texas, Southern Frontier .....	4,450	5,076	80	1 in 63	1141
18	Texas, Western Frontier .....	6,324	8,652	9	1 in 961	1368
19	New Mexico .....	5,873	928	22	1 in 42	158
20	California, Southern .....	1,707	326	2	1 in 163	190
21	California, Northern .....	1,599	2,167	19	1 in 14	1355
22	Oregon and Washington .....	1,831	549	3	1 in 183	300

*Consolidated table exhibiting the amount and annual ratio of sickness and mortality in each region, from diseases of the organs connected with the digestive system.*

No.	Regions.	Mean strength.	Number treated.	Deaths.	Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
1	Coast of New England .....	3,963	1,549	9	1 in 172	390
2	Harbor of New York .....	9,387	8,722	46	1 in 190	929
3	West Point .....	6,901	6,207	5	1 in 1241	899
4	North Interior, East .....	3,553	1,470	3	1 in 490	413
5	The Great Lakes .....	10,346	4,497	26	1 in 173	434
6	North Interior, West .....	7,230	3,474	17	1 in 204	480
7	Middle Atlantic .....	6,299	3,895	26	1 in 150	618
8	Middle Interior, East .....	2,456	2,002	4	1 in 500	815
9	Newport Barracks, Kentucky .....	1,454	1,083	15	1 in 72	744
10	Jefferson Barracks and St. Louis Arsenal .....	5,580	6,157	99	1 in 62	1103
11	Middle Interior, West .....	5,319	4,252	18	1 in 237	799
12	South Atlantic .....	2,800	1,795	13	1 in 138	641
13	South Interior, East .....	5,919	4,845	56	1 in 86	818
14	South Interior, West .....	10,013	6,142	63	1 in 97	614
15	Atlantic Coast of Florida .....	835	807	5	1 in 161	966
16	Gulf Coast of Florida .....	2,299	1,943	26	1 in 75	845
17	Texas, Southern Frontier .....	4,450	3,581	70	1 in 51	804
18	Texas, Western Frontier .....	6,324	4,635	65	1 in 71	733
19	New Mexico .....	5,873	2,926	31	1 in 94	498
20	California, Southern .....	1,707	796	9	1 in 88	466
21	California, Northern .....	1,599	1,132	21	1 in 54	708
22	Oregon and Washington .....	1,831	926	4	1 in 231	505

*Consolidated table exhibiting the amount and annual ratio of sickness and mortality in each region, from diseases of the respiratory system.*

No.	Regions.	Mean strength.	Number treated.	Deaths.	Proportion of deaths to cases.	Ratio of cases per 1,000 of mean strength.
1	Coast of New England .....	3,963	1,356	8	1 in 169	342
2	Harbor of New York .....	9,387	5,185	59	1 in 88	552
3	West Point .....	6,901	6,599	9	1 in 733	956
4	North Interior, East .....	3,553	1,586	16	1 in 99	446
5	The Great Lakes .....	10,346	4,281	50	1 in 85	413
6	North Interior, West .....	7,230	2,611	26	1 in 100	361
7	Middle Atlantic .....	6,299	2,281	19	1 in 120	362
8	Middle Interior, East .....	2,456	756	8	1 in 95	307
9	Newport Barracks, Kentucky .....	1,454	445	11	1 in 40	306
10	Jefferson Barracks and St. Louis Arsenal .....	5,580	2,746	65	1 in 42	492
11	Middle Interior, West .....	5,319	2,255	24	1 in 94	423
12	South Atlantic .....	2,800	1,089	9	1 in 121	389
13	South Interior, East .....	5,919	1,537	37	1 in 41	259
14	South Interior, West .....	10,013	2,588	51	1 in 51	258
15	Atlantic Coast of Florida .....	835	99	1	1 in 99	118
16	Gulf Coast of Florida .....	2,299	317	3	1 in 106	137
17	Texas, Southern Frontier .....	4,450	1,165	23	1 in 50	261
18	Texas, Western Frontier .....	6,324	1,376	23	1 in 60	217
19	New Mexico .....	5,873	1,218	29	1 in 61	207
20	California, Southern .....	1,707	540	7	1 in 49	199
21	California, Northern .....	1,599	420	5	1 in 84	262
22	Oregon and Washington .....	1,831	414	6	1 in 82	226



*Consolidated table exhibiting the amount and ratio of sickness and mortality in the several regions, from phthisis pulmonalis.*

No.	Regions.	Mean strength.	No. treated.	Deaths.	Ratio of cases per 1,000 of mean strength.
1	Coast of New England .....	3,963	19	5	4.8
2	Harbor of New York .....	9,387	56	35	5.9
3	West Point .....	6,901	6	8	0.8
4	North Interior, East .....	3,553	17	10	4.7
5	The Great Lakes .....	10,346	47	33	4.5
6	North Interior, West .....	7,230	30	15	4.1
7	Middle Atlantic .....	6,299	16	14	2.5
8	Middle Interior, East .....	2,456	6	3	2.4
9	Newport Barracks, Kentucky .....	1,454	5	4	3.4
10	Jefferson Barracks and St. Louis Arsenal ..	5,580	23	21	4.1
11	Middle Interior, West .....	5,319	28	13	5.2
12	South Atlantic .....	2,800	26	5	9.2
13	South Interior, East .....	5,919	43	28	7.2
14	South Interior, West .....	10,013	20	25	2
15	Atlantic Coast of Florida .....	835	2	1	2.3
16	Gulf Coast of Florida .....	2,299	16	3	6.9
17	Texas, Southern Frontier .....	4,450	18	11	4
18	Texas, Western Frontier .....	6,324	25	12	3.9
19	New Mexico .....	5,873	8	3	1.3
20	California, Southern .....	1,707	9	5	5.2
21	California, Northern .....	1,599	9	4	5.6
22	Oregon and Washington .....	1,831	6	2	3.2

It was originally the intention to close the first division of this report with a general analysis of the statistics, but various considerations have led to the abandonment of that purpose. The introduction of the individual opinions or deductions of the compiler in an official report of this character is considered of doubtful propriety. With regard, however, to the table showing the amount and ratio of phthisis pulmonalis in the several regions, the following remarks are submitted:

The ratio of "cases treated" is given in this table in preference to that of deaths, for the reason heretofore stated, that soldiers affected with chronic diseases are frequently discharged from the service in accordance with their own wishes.

The cadets of the Military Academy at West Point are young, are only admitted after a rigid examination in regard to their health and physical development, and remain but four years in that institution. The statistics for West Point should therefore be excluded from any analysis of the results exhibited in this table; those also for New York harbor are to be considered as constituting a partial exception for the reasons stated on page 14 of this volume. One other qualification relative to these statistics needs to be mentioned: the ratio given for the North Interior West is higher than would be the case if the statistics for Fort Crawford were thrown out.

It will be perceived by an examination of this table that, with exception of West Point, the lowest ratio of cases of consumption occurs in New Mexico, being only 1.3 per 1,000; and the highest in the South Atlantic Region, where it is 9.2 per 1,000.

It will also be noticed that the regions designated as the South Interior East and Gulf coast of Florida give the next highest proportions, being respectively 7.2 and 6.9 per 1,000 of mean strength. The ratios for these three regions, and also those for California, are higher than for any of the regions in the northern division. A careful examination of the consolidated temperature, rain, and weather tables in this volume, in connexion with the statistics relative to consumption, will, it is believed, lead to the following conclusions:

*First.* That temperature, considered by itself, does not exert that marked controlling influence upon the development or progress of phthisis which has been attributed to it. If a high range of temperature were favorable to the consumptive, the South Atlantic Region, the South Interior East, and the Gulf coast of Florida, should exhibit a lower ratio than the colder regions of the north and northwest, whereas the contrary obtains; and again, if a high range of temperature were the controlling element in causing an increased ratio of this disease in the two southern regions above named, we ought *not* to find a lower proportion of cases in Texas, where the temperature is higher, nor in the South Interior West, where it is nearly the same as in the South Atlantic Region.

*Second.* That the most important atmospherical condition for a consumptive is DRYNESS. An examination of the rain tables will serve in part to elucidate this position, and in part only, for the total annual precipitation in rain and snow may be equal in two or more places, and yet the average condition of the air as respects moisture—the dew-point—may widely differ. It is impossible to represent all these distinctive features by statistical tables, but the fact has been forcibly impressed upon the compiler during the minute examinations necessary to the preparation of this report.

*Third.* That next to DRYNESS in importance is an EQUABLE temperature—a temperature uniform for long periods, and not disturbed by sudden or frequent changes. An uniformly *low* temperature is much to be preferred to an uniformly *high* temperature. The former exerts a tonic and stimulating effect upon the general system, while the latter produces general debility and nervous exhaustion. The worst possible climate for a consumptive is one with long-continued high temperature and a high dew-point.

In this connexion, and in support of these deductions, reference is made to some of the opinions of medical officers recorded in this report, (vide pp. 27, 29, 81, 82, and 249 :) also to the following table, compiled from the "Statistical Reports on the Sickness, Mortality, and Invaliding in the British Army," showing the amount and ratio of cases of consumption at different stations occupied by British troops.

Station.	Mean strength.	No. treated.	Deaths.	Ratio of cases per 1,000 of mean strength.
Gibraltar .....	33,131	176	116	5.3
Malta .....	21,172	129	91	6.0
Bermuda .....	11,224	100	54	8.9
Nova Scotia and New Brunswick	26,806	149	111	5.5
Canada.....	90,456	524	327	5.7

GEOGRAPHICAL POSITIONS OF THE MILITARY POSTS,  
WITH  
THEIR LOCAL TOPOGRAPHY AND ALTITUDES ABOVE THE SEA,  
AND THE  
AUTHORITIES FROM WHICH THEY HAVE BEEN OBTAINED.

In the preparation of the Army Meteorological Register, which I had the honor to submit to the Surgeon General in October, 1855, and from which the following tables, carefully revised and corrected, are republished, every effort was made to obtain the true geographical positions and altitudes of the military posts. In the research required for that purpose, great aid was obtained from the reports of the officers in charge of the northeastern boundary survey, of the coast survey, of the Mexican boundary survey, and of the several surveys for a route for a railroad to the Pacific. The endeavor was then, and is now, to give the proper credits for those determinations which, in most instances, have been obtained from observations made with great scientific accuracy, and with the aid of the best portable instruments. The positions which are given, as reported by medical officers, are to be considered as close approximations only, though in some few instances the data may have been obtained by them with accuracy from officers of the corps of topographical engineers or other sources. The latitudes, longitudes, and altitudes given in these tables are to be considered as more correct than those in the special reports on the topography and diseases of the several posts. As a general rule, fractions of less than one minute of a degree have been omitted as unnecessarily precise for the present purpose.

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FORT KENT, MAINE.—South bank of St. John's river, at the mouth of Fish river. Country rolling and open. Position and altitude by Major J. D. Graham, United States Topographical Engineers. 1844.

FORT FAIRFIELD, MAINE.—South bank of Aroostook river, six miles from its entrance into the St. John's. On a local eminence 100 feet above the river, with a hilly or undulating forest back-ground. Exposure generally open. Position and altitude from Major J. D. Graham. 1844.

HANCOCK BARRACKS, MAINE.—Houlton, eastern boundary of the State, near the St. John's river. Locality similar to that of Fort Fairfield. Position and altitude by Major Graham. 1844.

FORT SULLIVAN, MAINE.—Moose island, Eastport, the most eastern point of the State. Open marine exposure. Position derived from the northeastern boundary survey. (Major J. D. Graham.)

FORT PREBLE, MAINE.—Cape Elizabeth, south side of Portland harbor. Exposure open, and mainly seaward. Position from United States Coast Survey.

FORT CONSTITUTION, NEW HAMPSHIRE.—On a point at the mouth of Piscataqua river, Portsmouth harbor, and three miles eastward from Portsmouth. Open marine exposure. Position from United States Coast Survey.

FORT INDEPENDENCE, MASSACHUSETTS.—On Castle island, Boston harbor, three miles southeast of State-house, Boston. Full marine exposure. Position from United States Coast Survey.

WATERTOWN ARSENAL, MASSACHUSETTS.—At Watertown, on the Charles river, six miles west of State-house, Boston. An inland and protected locality. Position from United States Coast Survey. Altitude approximate.



- FORT WOLCOTT, RHODE ISLAND.**—On Goat island, Newport harbor, half a mile from the town of Newport. The exposure is open, principally over water-surface, and toward the sea. Position from United States Coast Survey.
- FORT ADAMS, RHODE ISLAND.**—Brenton's Point, in Newport harbor, entrance to Narragansett bay, one mile westward from Newport. Open and free exposure, mainly marine. Some rocky elevations in the vicinity. Position from United States Coast Survey.
- FORT TRUMBULL, CONNECTICUT.**—On the right bank of Thames river, one mile south of New London, and two and a half miles from the shore of Long Island Sound. Exposure free and open, yet less direct to the sea than other ports of the Atlantic coast. Position from United States Coast Survey.
- FORT HAMILTON, NEW YORK.**—At the Narrows of New York harbor, on a point at the southwest corner of Long Island, and six miles south of New York city. Exposure particularly open seaward. Position from United States Coast Survey.
- FORT WOOD, NEW YORK.**—On Bedloe's island, New York harbor, two and a half miles south of New York city.
- FORT COLUMBUS, NEW YORK.**—On Governor's island, New York harbor, very near the city of New York. It is much less exposed to direct sea influences than Fort Hamilton, though surrounded by the waters of the river and bay. Position from the United States Coast Survey.
- WEST POINT, NEW YORK.**—On the west bank of Hudson river, fifty miles from the sea. The locality is surrounded by hills, varying from 600 to 1,400 feet in height on the west, except on the line of the river. Its confined position has a marked effect. Position and altitude from Assistant Surgeon Hitchcock.
- WATERVLIET ARSENAL, NEW YORK.**—At Watervliet, above Albany, on the west bank of the Hudson river, and nearly opposite to Troy. The locality is surrounded by hills and an elevated back country, and is much confined. It has local peculiarities somewhat like those of West Point. Position derived from those of Troy and Albany, as given in the American Almanac.
- PLATTSBURG BARRACKS, NEW YORK.**—At Plattsburg, on the western shore of Lake Champlain. The back country is rough and elevated. Position from Professor Thompson's map of Vermont. Altitude of lake by Professor Thompson, 90 feet; the post is 90 feet above low water of the lake.
- MADISON BARRACKS, NEW YORK.**—At Sackett's Harbor, on Lake Ontario, on the southern side of the bay formed by the entrance of Black river into the lake. Distant from the lake eight miles. The exposure is generally open and over a level district. Position from the most recent maps of New York.\* Altitude of Lake Ontario taken as 250 feet.
- FORT ONTARIO, NEW YORK.**—At Oswego, southern shore of Lake Ontario, on the east bank of Oswego river. Exposure generally open, and particularly so toward the lake. Its local elevation 50 to 60 feet above Lake Ontario. Position from the most recent maps of New York.
- FORT NIAGARA, NEW YORK.**—On a point of land at the mouth of Niagara river, and nearly surrounded by the waters of the river and of Lake Ontario. Exposure particularly level and open. Position from the Army Meteorological Register, compared and verified.
- BUFFALO BARRACKS, NEW YORK.**—At Buffalo, in the northern and most elevated portion of the city. Exposure generally free, yet not directly open to Lake Erie. Position from Army Meteorological Register for 1831 to 1842.
- ALLEGHANY ARSENAL, PENNSYLVANIA.**—At Pittsburg, three miles northeast of the city, and on the immediate bank of the Alleghany river. The position is confined and local in a great degree, with elevated districts at a distance from the river, and high bluffs bordering it. Position from the Army Meteorological Register, compared; the latitude as given in the American Almanac.†
- CARLISLE BARRACKS, PENNSYLVANIA.**—At Carlisle, in a valley opening to the Susquehanna river at Harrisburg. At the northwest there is a considerable mountain ridge, but the locality is generally open. Position from the most recent maps. Altitude from railroad surveys.
- FORT MIFFLIN, PENNSYLVANIA.**—On an island in the Delaware river, five miles below Philadelphia. Open exposure, with much water surface. Position from United States Coast Survey.
- FORT DELAWARE, DELAWARE.**—On an island in Delaware river, four miles from Newcastle, Delaware. Exposure open, with much fresh-water surface. Position from United States Coast Survey.
- FORT MCHENRY, MARYLAND.**—On an arm of Patapsco river, three miles southeast of Baltimore. Exposure entirely open and free, with much water surface. Position from the United States Coast Survey.

\* The longitude of Sackett's Harbor is given at 75° 57' W. in the American Almanac.

† The longitude of Pittsburg is variously given, as 80° 02', 80° 06', and 80° 14'; the last by Dr. Drake. It can hardly be greater than the position given in the Army Meteorological Register, to which it is restored.

- FORT SEVERN, MARYLAND.—Near Annapolis, on Severn river, at its entrance into Chesapeake bay. A very level and open water exposure. Position from the United States Coast Survey.
- FORT WASHINGTON, MARYLAND.—On the east bank of the Potomac river, fourteen miles below Washington city. At the east of the fort there are low hills, and the locality is somewhat confined and glen-like. Position from the United States Coast Survey.
- FORT MONROE, VIRGINIA.—At the terminus of the western shore of Chesapeake bay, on a sandy beach known as Old Point Comfort. An open exposure of water surface, within reach of the sea influence through the wide entrance of Chesapeake bay. Position from the United States Coast Survey.
- BELLONA ARSENAL, VIRGINIA.—On the right bank of James river, twelve miles from Richmond. An open exposure, elevated 100 feet above the river. Position derived from that of the capitol, Richmond.\*
- FORT MACON, NORTH CAROLINA.—On the point of Bogue island, near Beaufort. Direct ocean exposure. Position from the United States Coast Survey.
- FORT JOHNSTON, NORTH CAROLINA.—At Smithville, mouth of Cape Fear river. Exposure over water surface mainly, and open to the sea. Position from the United States Coast Survey.
- FORT MOULTRIE, SOUTH CAROLINA.—On Sullivan's island, entrance to Charleston harbor, eight miles from Charleston. Direct ocean exposure. Position from the United States Coast Survey.
- AUGUSTA ARSENAL, GEORGIA.—On an elevated position, three miles from Augusta, two miles from the Savannah river at the nearest point, and 200 feet above the river at Augusta. Among sand-hills, with a free exposure. Position from the Army Meteorological Register.
- OGLETHORPE BARRACKS, GEORGIA.—On low ground, one mile south of Savannah and twelve miles from the ocean. Level exposure over salt and fresh water surfaces. Position from the Army Meteorological Register.†
- FORT MARION, FLORIDA.—At St. Augustine, on the shore of St. Augustine bay. Level exposure over fresh and salt water surfaces. Position from the Army map of Florida, 1839.
- FORT SHANNON, FLORIDA.—At Pilatka, on the west bank of the St. John's river, near twenty miles southwest of St. Augustine district. Generally level. Position from the Army map; approximate.
- NEW SMYRNA, FLORIDA.—East coast of peninsula, on the right bank of Halifax river, eight miles from Mosquito bar, and two miles in a direct line from the Atlantic. The whole exposure entirely level and open. Position from the United States Coast Survey.
- FORT PIERCE, FLORIDA.—At Indian river inlet, east coast of peninsula, on the shore of St. Lucie sound, and separated by it from the immediate shore of the Atlantic. A level district and open exposure. Position derived from recent Coast Survey charts of the coast southward; approximate.
- FORT DALLAS, FLORIDA.—Near Cape Florida, east coast of peninsula, on the Miami river at the inner shore of Biscayne bay. Separated by this narrow bay and a point of land from the ocean. Position from the Topographical Bureau's map of Florida, 1846.‡
- KEY WEST BARRACKS, FLORIDA.—At Key West, Florida Keys, sixty miles southwest of Cape Sable. Direct sea exposure, with but a small area of land surface. Position from the United States Coast Survey.
- FORT MYERS, FLORIDA.—Near Charlotte harbor, west coast of peninsula, on the bank of Caloosahatchee river, near its mouth, and several miles from the immediate coast of the Gulf. Position from the United States Coast Survey.
- FORT HAMER, FLORIDA.—North of Charlotte harbor, west coast of peninsula, on a stream tributary to this bay, and some distance from the coast. Position from Assistant Surgeon Sloan.
- FORT BROOKE, FLORIDA.—At the head of Tampa Bay, west coast of peninsula, about thirty miles from the Gulf of Mexico. The surrounding country is low and level, as at all stations of the peninsula. Position from the United States Coast Survey.
- FORT MEADE, FLORIDA.—In the interior of the peninsula, forty-six miles east-southeast from Tampa Bay, and near the Kissimmee river. Its location is on a comparatively elevated sand ridge, higher than any adjacent land. Position from Topographical Bureau's map of Florida, 1846; altitude approximate.

\* Richmond, (capitol,) Virginia, lat. 37° 32' 17"; long. 77° 27' 28".—*American Almanac*.

† Position of Savannah Exchange, lat. 32° 4' 53"; long. 81° 5' 14". From United States Coast Survey.

‡ A sketch map of the Coast Survey, published in 1853, gives Cape Florida at lat. 25° 40', and long. 80° 05', nearly. Fort Dallas is about ten miles distant, northwest.

- FORT KING, FLORIDA.**—In the interior of the peninsula, east of Cedar keys, about forty miles from the coast of the Gulf of Mexico, and sixty miles from the Atlantic coast. The surrounding country is slightly undulating, alternately sandy pine barrens and marshy hammocks. Position by Assistant Surgeor. Forry, compared with recent maps.
- CEDAR KEYS, FLORIDA.**—On the western coast of the peninsula. The keys or islands are several miles from the main land. Position from United States Coast Survey.
- FORT BARRANCAS, FLORIDA.**—Entrance to Pensacola harbor, near Pensacola. The locality of the barracks is about one and a half miles west of the navy yard, on the west side of the entrance to the bay, and about eight miles southwest of Pensacola. Exposed to the Gulf. Position from United States Coast Survey.
- FORT MORGAN, ALABAMA.**—At Mobile Point, entrance to Mobile bay, near seventy miles south of Mobile. Position from United States Coast Survey.
- MOUNT VERNON ARSENAL, ALABAMA.**—Near Mobile river, about thirty-two miles north of Mobile. The post has a local elevation of near 200 feet above a small branch of the river, Coon creek. Position from Mitchell's map of Alabama, corrected by Coast Survey position of Mobile.
- EAST PASCAGOULA,\* MISSISSIPPI.**—At the mouth of Pascagoula river, or on islands near it. An open Gulf exposure, surrounded by low beaches and water surface. Position from Coast Survey.
- PASS CHRISTIAN, MISSISSIPPI.**—At St. Louis bay, entrance to Lake Borgne. (A summer station.) Open exposure to the Gulf. Position from Coast Survey charts.
- FORT PIKE, LOUISIANA.**—On the north side of Petite Coquille island, entrance to Lake Pontchartrain, thirty-five miles northeast of New Orleans. The influence of the winds and atmosphere of the Gulf is quite decided, the whole exposure being over water surface or very low shores. Position from Coast Survey charts.
- FORT WOOD, LOUISIANA.**—South of Petite Coquille island, seven miles southwest of Fort Pike, and between Lake Borgne and Lake Pontchartrain. Exposure less open than that of Fort Pike, and with a predominance of fresh-water surface and marshes in its vicinity. Position from Coast Survey charts.
- NEW ORLEANS BARRACKS, LOUISIANA.**—On the north bank of the Mississippi, three miles below the centre of the city. The locality is protected by forests to some extent from the winds of the Gulf. Position that of New Orleans; from Nicollet. Altitude of the river at the Barracks eleven feet above the Gulf; the hospital is placed at ten feet above Lake Pontchartrain, which is at mean sea-level, nearly.
- BATON ROUGE BARRACKS, LOUISIANA.**—At Baton Rouge, on the east bank of the Mississippi, one hundred and forty miles from New Orleans. The locality is on the first bluff met with on ascending the river. Exposure open. Position from Army Meteorological Register, 1831 to 1842, verified by comparison with the most recent maps.
- FORT JESUP, LOUISIANA.**—Southwest of Nachitoches, Louisiana, on a ridge midway between the Red and Sabine rivers, twenty-five miles distant from each. The country is rolling, but not hilly. Winds from the Gulf are felt through the summer. Position from Graham's and Mitchell's maps. ●
- FORT TOWSON, INDIAN TERRITORY.**—Near Red river, six miles distant from it and from the Kiamichi, a branch entering it from the north. In part surrounded by hilly and rolling country, and on the south by open marshes or prairies. Position measured from the corrected maps of the Pacific Railroad surveys. Altitude for the post, above Red river and Gates' creek, from Assistant Surgeon Madison. Whole altitude approximate.
- FORT WASHITA, INDIAN TERRITORY.**—Near the Washita river,† thirty miles from its entrance into Red river. The location is a mile and a half east of the Washita, one hundred and fifty feet above it, and on the border of high open prairies. Position from the map of Captain Whipple, 1854, compared; approximate. Altitude of surface of water in Red river at Preston, by Captain Pope, Topographical Engineers, 641 feet. Altitude for post taken as reported by Assistant Surgeon Baily.‡
- FORT SMITH, ARKANSAS.**—At the mouth of Poteau river, on the south bank of the Arkansas, and at the western limit of Missouri. Southward the country is broken and hilly, but the locality is not confined. Position and altitude by Captain Whipple, Topographical Engineers, 1854, from astronomical and barometric observations.

\* This is a summer station for the forces stationed at New Orleans. It has had various positions at East Pascagoula and on the islands near, called Camp Lawson, Camp Twigg, &c.

† The Western or False Washita.

‡ The altitudes on Red river given by Captain Pope appear too great; and as they are determined by a line of levels from El Paso, the lower altitude of Dr. Baily is taken, who does not give his mode of obtaining it.



- FORT GIBSON, INDIAN TERRITORY.**—On the east bank of the Neosho or Grand river, three miles from its junction with the Arkansas. The locality is low, surrounded by bottom land on one side, and more elevated prairie on others, with hills in the distance. Position from Army Meteorological Register, 1826 to 1830. Altitude determined by Assistant Surgeon Coolidge, in 1847, as the result of the mean of ten months' barometric readings, compared with the mean reading for the same period at Fort Columbus, New York.\*
- FORT SCOTT, KANSAS.**—Near the Marmiton river, four miles from the western boundary of Missouri, on the military road from Fort Leavenworth to Fort Gibson. The locality is a high table prairie, which, at the south of the Marmiton, divides the tributaries of the Missouri from those of the Arkansas. Exposure particularly open and unconfined. Position from Mitchell's map of Missouri. Altitude estimated.
- JEFFERSON BARRACKS, MISSOURI.**—On the west bank of the Mississippi, ten miles below St. Louis. The locality is on a bluff 100 feet above the river, with a somewhat hilly back-ground. Exposure not open westward, but affected by the river depression. Position derived from that of St. Louis. Altitude from Nicollet, for the surface of the Mississippi.
- ST. LOUIS ARSENAL, MISSOURI.**—On the west bank of the Mississippi, three miles below the city of St. Louis. The locality is on the immediate bank of the river, much confined in regard to exposure, and affected by local extremes. Position that of Nicollet for St. Louis cathedral. Altitude from Dr. Engelmann's barometric comparisons with New Orleans.
- NEWPORT BARRACKS, KENTUCKY.**—At Newport, on the south bank of the Ohio river, opposite Cincinnati. The exposure is generally open. Position derived from that of Professor Mitchell's observatory, on Mount Adams, an eminence overlooking Cincinnati from the northeast. Altitude approximate, above the river.
- DETROIT BARRACKS, MICHIGAN.**—At Detroit, within the city limits. The locality has been changed at times, always retaining an open inland exposure. Position from Army Meteorological Register, 1831 to 1842.†
- DEARBORNVILLE ARSENAL, MICHIGAN.**—Near Detroit, on the river Rouge, about ten miles west of the city. Country low and flat. Position derived from that of Detroit.
- FORT GRATIOT, MICHIGAN.**—At the southern extremity of Lake Huron, west bank of St. Clair river. Exposure generally open, and over an undulating forest country, without hills. Position from Mitchell's map; approximate.
- FORT MACKINAC, MICHIGAN.**—Island of Mackinac, in the straits connecting Lakes Huron and Michigan. The fort is on an abrupt elevation, 150 feet above the lake, with a hundred feet or more of greater elevation in a hill north of it. Exposure particularly open, except to the north. Position from Captain Macomb's Survey of the Lakes.
- FORT BRADY, MICHIGAN.**—At the outlet of Lake Superior, Sault St. Marie, on the south side of the river. It is fifteen miles from the open lake, on a shore but little elevated above the river, and with an open exposure. Latitude and altitude from Army Meteorological Register, 1831 to 1842. Longitude by Major Long, Topographical Engineers, 1823.
- FORT WILKINS, MICHIGAN.**—At Copper Harbor, Keewenaw Point, south shore of Lake Superior. The precise location and exposure are not known. Position from the maps of the geological surveys.
- FORT HOWARD, WISCONSIN.**—At Green bay, on the west side of Fox river, at its mouth. Locality but slightly elevated, with a low, marshy inland exposure. Position from Mitchell's map of Wisconsin.
- FORT ATKINSON, WISCONSIN.**—On Rock river, about forty miles west of Milwaukee. Position from recent maps of Wisconsin.
- FORT DEARBORN, ILLINOIS.**—At Chicago, on the immediate bank of Chicago river, and very near the shore of Lake Michigan. Entirely level and open prairie and lake exposure. Position that of Chicago in American Almanac, 1855.
- FORT WINNEBAGO, WISCONSIN.**—On the east bank of Fox river, (tributary to Green bay,) central Wisconsin. District low, level, marshy, and open. Position from Army Meteorological Register, 1826 to 1830, compared with Nicollet's and other recent maps. Altitude derived from those of Fort Crawford and Fort Howard; approximate.
- FORT CRAWFORD, WISCONSIN.**—At Prairie du Chien, on the east bank of the Mississippi, two miles above the mouth of the Wisconsin river. Exposure of the locality open, with bluffs at two or three miles distance. Position from Army Meteorological Register, 1826 to 1830, compared with Nicollet's and Owen's maps.‡ Altitude that of Prairie du Chien, from Nicollet.

\* Assistant Surgeon Coolidge reports, in January, 1844, that "the latitude and longitude of this post have recently been approximately determined by Captain Cady, 6th infantry, at 35° 48' 10", and 95° 3' 15", by calculations based on McCoy's survey of the Cherokee boundaries in 1837. The source of the determination used is not known."

† St. Paul's Church, Detroit, is given in the American Almanac for 1855 at 83° 2' 30" W. long.

‡ Position for Fur Company's house, by Nicollet, lat. 43° 3' 6" N.; 91° 9' 19" W. long.

- FORT ARMSTRONG, ILLINOIS.**—On Rock island, in the Mississippi river, four miles above the mouth of Rock river. Position from Nicollet's map.
- FORT ATKINSON, IOWA.**—On Turkey river, northwest of Dubuque, and near fifty miles westward from the Mississippi at the nearest point. Locality not known. Position from Nicollet's map. Altitude estimated.
- FORT RIPLEY, (GAINES,) MINNESOTA.**—On the west bank of the Mississippi, six miles south of the mouth of Crow-wing river. Exposure generally level and open, with gradual elevations in the back-ground. Position and altitude from those of mouth of Crow-wing river, by Nicollet.
- FORT SNELLING, MINNESOTA.**—At the junction of the St. Peter's with the Mississippi river, on the enclosed angle. The position is locally elevated, but it has a back-ground of bluffs protecting it on the northwest. Position and altitude from Nicollet.
- FORT RIDGELY, MINNESOTA.**—At the head of navigation of the St. Peter's river, near seventy miles southwest of Fort Snelling. Position from Nicollet's map. Altitude estimated from Nicollet's altitudes of points on the St. Peter's river.
- FORT DODGE, (CLARKE,) IOWA.**—On the upper portion of the Des Moines river, at the junction of Lizard fork. Exposure generally open, surrounded by extensive prairies. Position from Owen's Geological Report. Altitude by Owen for course of Des Moines river ; by Nicollet at its mouth.
- FORT DES MOINES, IOWA.**—On the Des Moines river, central Iowa. Exposure generally open. Position from Owen's Geological Report. Altitude from Owen for Des Moines river ; from Nicollet for its mouth.
- FORT CROGHAN, IOWA.**—On the east bank of the Mississippi, near twenty miles below Council Bluffs. High bluffs are at some distance from the river, three to six miles, but the exposure is generally open. Position from Nicollet's map. Altitude from Lieutenant Donelson, 1854.
- COUNCIL BLUFFS,<sup>c</sup> NEBRASKA.**—On the west side of the Missouri river, thirty miles above the mouth of the Platte. The bluffs are much exposed toward all points, while the immediate valley of the river is confined and local. Position from Nicollet's map. Altitude from Nicollet and Lieutenant Donelson, 1854 ; (1,032 feet for the river, and 1,327 feet for the bluffs.)
- FORT LEAVENWORTH, KANSAS.**—On the west bank of the Missouri, twenty miles above the mouth of Kansas river. The locality is elevated and the exposure particularly open. Position from Major W. H. Emory ; altitude that of Nicollet for the landing, 746 feet, 150 feet being given by the officers as the height of the post above the river.
- FORT RILEY, KANSAS.**—On the angle formed by the junction of Republican fork (or Pawnee river) and Kansas river. Surrounded by open plains. Latitude by Captain Gunnison ; longitude from Fremont.† Altitude derived from positions on Captain Gunnison's line of railroad survey ; approximate.
- FORT KEARNY,‡ NEBRASKA.**—On the south bank of Platte river, midway between the Mississippi and the Rocky mountains. The valley of the Platte is broad, and the bluffs are remote and of moderate elevation. Position from Captain Stansbury, Topographical Engineers, 1850. Altitude by Fremont.
- FORT LARAMIE, NEBRASKA.**—At the junction of the Laramie river with the north fork of the Platte. Locality elevated, and exposure open, over naked plains and bluffs. Position by Fremont, 1843. Altitude from Captain Stansbury's map.
- FORT ATKINSON, KANSAS.**—Near the crossing of the Arkansas river, Santa Fé route, twenty-six miles below the point so designated. The bluffs are low, and the country on all sides unbroken prairie, without timber even on the river bottom. Position and altitude from Captain Gunnison's railroad survey, 1854.
- FORT ARBUCKLE, INDIAN TERRITORY.**—Near the Washita river, "four miles southward at the nearest point, and seventy-six miles north of west of the junction of this with Red river."§ The country generally open, though woody at the post. Hills at the southward. Position measured from the general Pacific railroad map, 1855.|| Altitude derived from comparison with points on Captain Whipple's line of survey ; approximate.
- FORT WORTH, TEXAS.**—On the west fork of the Trinity river, Upper Texas. The locality is a high, open prairie, fully exposed, and intermediate between the two belts of woodland called the Cross Timbers. Elevation above the stream 150 feet. Position from Colonel Johnston's map, Topographical Engineers, 1849. Altitude estimated by comparison with that of Red river and other points.

\* The town of Council Bluffs is on the east side of the river, below the site of the old fort.

† Fremont gives the longitude of an encampment half a mile west of the junction of these rivers at 96° 24' 56" ; 1843.

‡ "Old Fort Kearny" was on the Missouri, below the mouth of the Platte.

§ Assistant Surgeon Ghisan, 1852.

|| The position given previous to 1854 was from the best Topographical Bureau's maps, but the great discrepancies previously existing in the positions of this part of our territory are mainly removed by the recent Pacific railroad surveys. The final position is taken from these.

- FORT GRAHAM, TEXAS.**—On the east bank of the Brazos, José Maria village. The valley of the Brazos, though wide, is bounded by bluff banks, which give a somewhat local character to the exposure. Position from Colonel Johnston's map, 1849. Altitude estimated.
- FORT BELKNAP, TEXAS.**—"On the north bank of the Red fork of the Brazos, 110 miles northwest of Fort Graham. The locality is on the edge of a rolling prairie extending back many miles."° South of the river there are hills. Position from Captain Pope's map, 1855. Altitude estimated from altitudes taken near it on the line of Pope's survey.
- POST PHANTOM HILL, TEXAS.**—Clear fork of Brazos river. This post is about seventy-five miles southwest of Fort Belknap, in a similarly high and open country. Position derived from points of the surveys of Johnston, Pope, and others. Altitude similarly obtained.
- FORT CHADBOURNE, TEXAS.**—On Oak creek, a tributary of the Colorado river from the north. The surrounding country is hilly and mountainous, but the particular features of the locality are not known. Position and altitude from a sketch by Assistant Surgeon Swift, based on survey by Colonel Johnston, of Topographical Engineers.
- CAMP J. E. JOHNSTON, TEXAS.**—On the Conchos river, a branch of the Colorado from the south, near forty miles southwest of Fort Chadbourne. The locality is in a valley, five miles wide, surrounded by hills and mountains in the distance. Position and altitude from a sketch by Assistant Surgeon Swift, based on surveys by Colonel Johnston.
- FORT GATES, TEXAS.**—On the Rio Leon, a tributary of the Brazos river, fifty-five miles southwest of Fort Graham. The locality is in a valley, with much wooded country in the vicinity. Position from Colonel Johnston's map. Altitude estimated.
- FORT CROGHAN, TEXAS.**—On a small tributary of the Colorado, near ten miles from that river, and in a somewhat sheltered valley. Position from Johnston's map. Altitude approximate.
- FORT MARTIN SCOTT, TEXAS.**—At Fredericksburg, on the Rio Pedernales, a branch of the Colorado river. It is two miles from Fredericksburg and seventy-five from San Antonio. The locality is in a valley, with hills and mountains at the west. Position from Johnston's map. Altitude approximate.
- FORT MCKAVETT, TEXAS.**—On the San Saba river, a branch of the Colorado. The locality is on the south bank, at an elevation of 100 feet above the river, and with a generally open exposure. Position by Assistant Surgeon Crawford, from Johnston's surveys, corrected by comparison with recent surveys. Altitude by Assistant Surgeon Crawford.
- FORT MASON, TEXAS.**—On the Llano river, a tributary of the Colorado. A hilly district, though not locally confined in its exposure. Position from combined railroad map, 1855.
- FORT TERRETT, TEXAS.**—At the source of the Rio Llano, a tributary of the Colorado. The locality is on a small plain, with a very hilly and broken country in the direction of the source of the river. Position from the recent combination of survey maps. Altitude (from Assistant Surgeon Anderson) by Colonel Johnston, Topographical Engineers.
- AUSTIN, TEXAS.**—At the city of Austin, on the Colorado. The locality at which the observations were taken not known. This point is at the head of navigation of the Colorado, and differs much in altitude and climate from the chain of posts at the westward. Position from Johnston's map.
- SAN ANTONIO, TEXAS.**—At the town of San Antonio, on San Antonio river. The precise position of the buildings for military occupation is not known. The station compares very well with Austin, and is but little more elevated. Position from Johnston's and other maps. Altitude by Major Graham, Topographical Engineers.
- FORT EWELL, TEXAS.**—On the Nueces river, at its southern bend. The country a low and generally arid plain. Position from Johnston's and the railroad maps.
- FORT MERRILL, TEXAS.**—On the Nueces river, midway between Fort Ewell and Corpus Christi. The country a low arid plain. Position from the recent survey maps.
- CORPUS CHRISTI, TEXAS.**—At the head of Corpus Christi bay. The exposure to the Gulf of Mexico is somewhat broken by the distance and the islands separating the coast bays from the Gulf. Position by Captain Cram, Topographical Engineers.
- FORT BROWN, TEXAS.**—At Brownsville, opposite Matamoras, and on the north side of the Rio Grande, about twenty miles from the coast of the Gulf. Position and altitude from Major W. H. Emory, Mexican Boundary Survey. Altitude approximate.

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\* Assistant Surgeon Bailly, 1852.



- RINGGOLD BARRACKS, TEXAS.**—Near the town of Rio Grande, and nearly opposite Camargo, Mexico, on the Rio Grande, sixty miles above Fort Brown. The locality is on the low banks of the river, with a level back-ground. Position and altitude from Major W. H. Emory, Mexican Boundary Survey.
- FORT MCINTOSH, TEXAS.**—At Laredo, valley of the Rio Grande, on a sandy plain, fifty feet above the river, two miles in width, and with a moderately hilly back-ground. Exposure free. Position and altitude from Major W. H. Emory, Mexican Boundary Survey.
- FORT DUNCAN, TEXAS.**—At Eagle Pass of the Rio Grande, on a dry elevated plateau, much above the river bed. The locality is overlooked by a range of sand-hills of moderate elevation. Position and altitude from Major W. H. Emory, Mexican Boundary Survey.
- FORT INGE, TEXAS.**—On the Leona river, forty-five miles northeast of Fort Duncan. The district is moderately hilly and generally wooded. Position from Major W. H. Emory, Mexican Boundary Survey. Altitude by Colonel Graham.
- FORT LINCOLN, TEXAS.**—On the Rio Seco, a branch of Nueces river, fifty-five miles west of San Antonio. The district is quite open and arid, and the locality elevated, with free exposure south and east, and some protecting hills at the northwest. Position from Johnston's surveys. Altitude approximate.
- FORT CLARK, TEXAS.**—On the Las Moras, a small tributary of the Rio Grande, and about thirty miles north of Fort Duncan. At the west bank of the river, on a local elevation of fifty feet above it. Exposure free, and the vicinity wooded. Position from general railroad map, 1855. Altitude estimated; approximate.
- FORT DAVIS, TEXAS.**—In the mountains between the Pecos river and El Paso, near Wild Rose Pass, at the sources of the Limpia river. The location of the post is in a deep cañon of the mountains, selected for the purpose of protection against the severity of the winters. Position and altitude from Assistant Surgeon Guild, by Lieutenant Smith, Topographical Engineers.
- FORT BLISS, TEXAS.**—Nearly opposite El Paso, on the north bank of the Rio Grande. The locality is in the immediate river valley, opening southward. Table lands border the river here. Position that of El Paso, by the Boundary Commission. Altitude that of Molino, near El Paso, by the Boundary Commission.
- FORT FILLMORE, NEW MEXICO.**—Near Mesilla, on the east side of the Rio Grande, near forty miles above El Paso. The locality is a wide valley, with high mountains at ten to fifteen miles distance eastward. Position from Major W. H. Emory, Mexican Boundary. Altitude by Lieutenant Parke, Topographical Engineers.
- DOÑA ANA, NEW MEXICO.**—In the Rio Grande valley, near fifty miles above El Paso, and seven miles below the terminus of the Jornada del Muerto. The locality is a wide valley, with high protecting mountains at several miles' distance. Position and altitude from the Mexican Boundary Survey.
- FORT THORN, NEW MEXICO.**—"In the valley of the Rio Grande, and opposite the centre of the Jornada, sixty miles below Fort Conrad."<sup>\*</sup> The location is at Santa Barbara, elevated fifty feet above the river border, and with a back-ground of high mountains west and north. Position derived from those of Doña Ana and Fort Webster. Altitude approximate.
- FORT WEBSTER, NEW MEXICO.**—At the Copper Mines, near the sources of the Rio Mimbres and of the Gila, Sierra Madre.† In a cañon among abrupt mountains. Position from the Mexican Boundary Survey.
- FORT CONRAD, NEW MEXICO.**—On the west bank of the Rio Grande, near Valverde, and near one hundred and fifty miles above El Paso. The locality is on a gravelly mesa, half a mile west of the river, which rises by successive steps into a rough and high range of mountains. No immediate protection. Position and altitude from Assistant Surgeon Langworthy, 1853; not instrumentally determined.
- FORT CRAIG, NEW MEXICO.**—At the northern terminus of the Jornada del Muerto, Rio Grande valley. This post is nine miles below Fort Conrad, southward, and on the river. High mountains approach very near at the west.
- SOCORRO, NEW MEXICO.**—On the west bank of the Rio Grande, in a recess of hills and abrupt mountains of great elevation, which nearly surround it, and render its exposure confined and local. Position from Major Emory's survey. Altitude from Major Emory.
- ALBUQUERQUE, NEW MEXICO.**—At the town of Albuquerque, east bank of the Rio Grande. The valley is here more open, and the mountains less abrupt, than at Socorro. Position and altitude by Captain Whipple, Topographical Engineers, 1854.

NOTE.—The observations made at "El Paso" in 1850, 1851, &c., were at a locality opposite the town, and slightly above it. Fort Bliss is lower down, a little below El Paso, at Magoffinsville. The observations are combined as at one locality. (See report of Captain Pope, Topographical Engineers, of railroad explorations, pp. 43, 44, &c., 1854.)

\* Report of explorations by Brevet Captain John Pope, Topographical Engineers, 1854.

† The post was removed in October, 1852, to a point on the Rio Mimbres, eight miles east-northeast of the Copper Mines.

- CEBOLLETA, (LAGUNA,) NEW MEXICO.**—At the sources of a branch of the Puerco river, west of the Rio Grande and southwest of Santa Fé. At Cebolleta the post was in a narrow valley or glen, facing eastward, with a very defective and local exposure. Subsequently, in October, 1851, the post was removed twenty miles southward to Laguna, an open valley of the San José river, a tributary of the Rio Puerco. Position and altitude of Laguna from the railroad survey of Captain Whipple, Topographical Engineers, 1854. Position of Cebolleta from Simpson's map.
- ABIQUIT, NEW MEXICO.**—On the Rio de Chama, a tributary of the Rio Grande from the west, northwest of Santa Fé. The locality is a narrow valley in the vicinity of very high mountains. Position from Simpson's map. Altitude approximate.
- SANTA FÉ, NEW MEXICO.**—On an elevated plateau, near forty miles eastward of the Rio Grande. The local exposure is very free and open, but lofty mountain ranges enclose the plateaus and the immediate valley of the river. Position and altitude by Major Emory.
- LAS VEGAS, NEW MEXICO.**—Near fifty miles eastward from Santa Fé, on the sources of Pecos river, and at the border of the Great Plains. The locality is much confined, and influenced by high mountains at the northwest and northeast, but it opens freely southeastward over the high plains of upper Texas. Position and altitude derived from points of Captain Whipple's line of survey, 1854.
- FORT UNION, NEW MEXICO.**—Northeastward from Santa Fé about fifty miles, on the Moro river, a branch of the Canadian. Locality in a mountainous region, opening eastward to the Great Plains. Position from Assistant Surgeon J. Byrne, determined. Altitude from the same, approximate.
- RAYADO, NEW MEXICO.**—In a mountain valley, near the Cimarron river, a branch of the Canadian from the west. Locality mountainous. Position from Simpson's map of New Mexico.
- TAOS, NEW MEXICO.**—At the town of Taos, north of Santa Fé, an elevated plateau, near a tributary of the Rio Grande from the east. Exposure generally open, similar to Santa Fé in the position of adjacent mountains. Position from Lieutenant Parke's map, 1851. Altitude approximate.
- CANTONMENT BURGWIN, NEW MEXICO.**—Near the Rio Grande, nine miles northward from Taos. A rough mountainous district. Local features not known. Position and altitude derived from those of Taos.
- FORT MASSACHUSETTS, NEW MEXICO.**—In a sheltered valley on Utah creek, opening into the great valley of San Luis. Lofty mountains rise abruptly on the east, and surround San Luis valley on all sides. Position and altitude from the railroad survey of Captains Gunnison and Beckwith, 1854.
- FORT DEFLANCE, NEW MEXICO.**—In a greatly elevated district of mesas and mountains, west of the principal chain of the Sierra Madre, and near the sources of the Rio de Chelly, a tributary of the Colorado of California. The locality is "a narrow cañada," affected by local influences, with high mountains northward. Position from Sitgreaves' and Whipple's surveys. Altitude derived from points on Whipple's survey; approximate.
- FORT YUMA, CALIFORNIA.**—On the west bank of the Great Colorado, eighty miles from the head of the Gulf of California. The locality is a rocky bluff, seventy-five feet above the river, with sand-hills and rocky bluffs bordering the wide valley, and connecting with an immense sand desert on the west. Position and altitude from Major W. H. Emory's Mexican Boundary Survey.
- SAN DIEGO, CALIFORNIA.**—Near the town of San Diego, at the head of a valley six miles distant from the Old Presidio, northeast, and eight miles from the sea-shore. The valley opens upon the plain extending to the town and shore hills, of 250 feet elevation, bordering the valley and a range of mountains lying about fifteen miles east.\* Position from Lieutenant Williamson's survey map, 1855, based on Boundary Commission and Coast Survey positions for San Diego. Altitude approximate.
- SAN LUIS REY, CALIFORNIA.**—At a town of that name, near forty miles northwest of San Diego. The locality is in a wide valley opening to the sea, and but four miles from it. Position from Lieutenant Williamson's survey map, 1854.
- POST RANCHO DEL CHINO, CALIFORNIA.**—In a wide valley near the Rio Santa Ana, thirty-five miles from the coast, and one hundred and twenty miles north of San Diego. The position is inland, but without peculiar local features. Position from Williamson's map, 1854. Altitude approximate.
- POST RANCHO DE JURUPA, CALIFORNIA.**—In the valley of the Rio Santa Ana, eighteen miles northeast of Del Chino. The locality is elevated, in a valley three to four miles wide, with rough hills bordering it. (Assistant Surgeon R. O. Abbott, September, 1852.) Position from Lieutenant Williamson's Survey of the Passes of the Sierra Nevada. Altitude derived from that given by Lieutenant Williamson for San Bernardino.

\* The local description is by Assistant Surgeon Summers, October, 1852. The locality is said to have been changed to other points of the plain and vicinity.



- FORT TEJON, CALIFORNIA.**—At the head of the San Joaquin valley, in a deep narrow valley opening westward. Position and altitude by Lieutenant Williamson, Topographical Engineers.
- FORT MILLER, CALIFORNIA.**—On the San Joaquin river, at the foot-hills of the Sierra Nevada, and about midway in the entire length of the San Joaquin valley. The locality has the peculiar features of this deep valley, several hundred miles in length, and about fifty in width, and shut in by lofty mountain ranges both from the sea and the interior.\* Position and altitude by Lieutenant Williamson, Topographical Engineers, 1854.
- MONTEREY, CALIFORNIA.**—On the south shore of the bay of Monterey, near seventy miles (direct) south-southeast from San Francisco. The locality is a low plain, with a gentle slope in the back-ground, and a very full exposure to the sea. The mountains are too far distant to influence the position. Position from Lieutenant Wise, United States navy, 1847, and Coast Survey, 1851. Altitude changed in 1850, and again in 1852.
- SAN FRANCISCO, CALIFORNIA.**—At Presidio San Francisco, near the city. The locality is an elevated point, three miles west of the city towards the coast, and much more directly exposed to the sea. The entrance to San Francisco bay bounds the point on the north. Position from United States Coast Survey, 1853.
- SONOMA, CALIFORNIA.**—On a small stream entering into San Pablo bay, near forty miles north of San Francisco. The locality is partially protected from the sea exposure by spurs of the coast range of mountains, and its character in this respect is intermediate between the posts of the coast and those of the interior of California. Position derived from Coast Survey and other maps; approximate.
- BENICIA, CALIFORNIA.**—At the town of Benicia, entrance to Suisun bay, thirty miles northeast of San Francisco. The locality is one mile eastward from the town, with an exposure over water surface and low plains in all directions except north and northwest, where there are protecting hills. The nearest point on the Pacific coast is southwest thirty-five miles; in a right line west it is distant fifty miles. Position from Com. Ringgold's chart, United States navy, 1850. Altitude from Assistant Surgeon Griffin.
- CAMP ANDERSON, CALIFORNIA.**—At Sutter City, near Sacramento, 120 miles northeast from San Francisco. The exposure is locally over low plains, with much water surface, in the wide interior valley of Sacramento. Position from Com. Ringgold's chart, 1850. Altitude approximate.
- CAMP FAR WEST, CALIFORNIA.**—On Bear creek, a tributary of Feather river, near fifteen miles from its mouth and from the town of Marysville, and thirty-five miles north-northeast from Sacramento. The locality is a confined valley at the base of the foot-hills of the Sierra Nevada, on the east side of the great Sacramento valley. Position from Assistant Surgeon Murray, compared. Altitude approximate.
- FORT READING, CALIFORNIA.**—On a small tributary of Sacramento river, one and a half miles from that river, and near five miles from the town of Trinidad. The locality is a confined valley, with dry table-lands in the immediate vicinity. It is near the upper extremity of Sacramento valley, and the mountain ranges are from twenty to forty miles distant at either side. Position and altitude from Lieutenant Beckwith, United States army, 1854. (Report of Pacific Railroad Explorations.)
- FORT HUMBOLDT, CALIFORNIA.**—Near the town of Bucksport, Humboldt bay, coast of California. The locality is a plateau of slight elevation fronting the bay and fully open to the Pacific. From the coast, eastward two miles. Position and altitude from Assistant Surgeon Deyerle, derived from United States Coast Surveys.
- FORT JONES, CALIFORNIA.**—At Scott's valley, on a small tributary of Klamath river, near one hundred miles from the head of Sacramento valley, and an equal distance in a direct line from the Pacific coast. The locality is not closely confined, though with high mountains—the Siskiyou and Salmon ranges—on the south and east. Position and altitude from Assistant Surgeon Crane, December, 1852.
- FORT ORFORD, OREGON.**—At Port Orford, near ten miles southward from Cape Blanco or Orford. The locality is at the head of a bay (Tichenor bay or Ewing Harbor) opening southward, and the exposure very direct to the Pacific. Position from Assistant Surgeon Milhau, 1854. compared.
- FORT LANE, OREGON.**—Near Jacksonville, Rogue river, in a large valley opening westward, with high mountain ranges in the vicinity. Position from surveys of Oregon, through Assistant Surgeon Crane, 1854.
- ASTORIA, OREGON.**—At the town of Astoria, south bank of the Columbia river, near ten miles from the coast of the Pacific. The locality has a free exposure over water surface and low plains to the sea, with rough hills at the south and east. Position from United States Coast Survey, 1853.
- FORT VANCOUVER, COLUMBIA BARRACKS, OREGON.**—On the north bank of the Columbia river, eighty miles in a direct line from the Pacific at its mouth. The valley of the river opens northwestward here, and the coast range of mountains protects it from sea exposure. The Barracks and old Fort Vancouver have been occupied alternately; the difference of position is unimportant. The plain is low and wide, with much water surface in the vicinity. Position by Dr. Evans, survey of Oregon, 1852.

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\* Assistant Surgeon Sorrel, September, 1854



FORT DALLES, OREGON.—At the passage of the Columbia river through the eastern portions of the Cascade range of mountains. The locality is on the south bank of the river, half a mile from it, and elevated about one hundred feet. The exposure is over bare plateaux, with the Cascade range protecting the district at the west. Position from Assistant Surgeon Summers. Altitude from Lieutenant Saxton, (of the North Pacific railroad survey,) 1854.

FORT STEILACOOM, WASHINGTON TERRITORY.—At Steilacoom, the southern extremity of Puget's sound. The locality is one mile east from the shore of the sound, with open plains and much water surface in the vicinity. The Cascade and coast ranges of mountains enclose the area of the sound and plains. Position from the survey of Oregon, 1852.

CANTONMENT LORING, OREGON.—Near Fort Hall, upper portion of Lewis' Fork of Columbia. The post is about equidistant from Great Salt Lake and the South Pass, north and west respectively. The locality is on the east bank of the river, five miles above Fort Hall, in a low valley three to five miles wide. The principal mountains are too far distant to affect the position locally. Position and altitude derived from those of Fort Hall, by Fremont, 1843.

GREAT SALT LAKE, UTAH.—On a plain near ten miles south of the lake. A chain of mountains is quite near at the east, but in other directions the exposure is open and free. Position by Captain Stansbury, Topographical Engineers, 1850. Altitude from five months' barometric observations by Lieutenant Beckwith, United States army, 1854.

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NOTE.—Valuable information respecting the local features of several posts in the least known portions of Texas and New Mexico has been communicated by Assistant Surgeon White.

# CONSOLIDATED TABLES AND SUMMARIES.

## TEMPERATURE SERIES.

In the following tables the mean results of the observations of temperature are given for each month, season, and year during the entire period of observation at each post, with a summary for the whole period. A part only of the records from 1822 to 1830 was published in the first preparation of results; and in the second, incomplete years, and observations not continuous for a series of years, were also omitted. The series as now given embrace all the unpublished as well as published records of the Army Medical Bureau, from the complete organization of the system of meteorological observations in 1822 to the close of 1854, a period of thirty-three years.

### FORT KENT, MAINE.

*Latitude 47° 15' N., Longitude 68° 35' W. Altitude above sea 575 feet.*

	Jan.	Feb.	Mar.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1842 ..	6.64	14.04	25.11	33.59	45.15	57.20	64.68	64.05	49.70	40.34	29.35	12.02	34.62	61.98	39.80	10.90	36.82
1843....	19.21	8.53	24.54	40.00	50.96	62.10	64.47	68.70	.....	.....	.....	.....	38.50	65.09	.....	.....	.....
1844....	.....	.....	.....	.....	46.84	59.19	59.08	59.68	53.47	39.82	26.59	10.70	.....	59.65	39.96	.....	.....
1845....	7.44	12.31	20.94	32.26	44.49	57.49	61.73	61.78	.....	.....	.....	.....	32.56	60.33	.....	.....	.....
Mean...	11.10	11.63	23.53	35.28	46.86	58.99	62.49	63.55	51.59	40.08	27.97	11.36	35.22	61.68	39.88	11.36	37.04

### FORT FAIRFIELD, MAINE.

*Latitude 46° 46', Longitude 67° 49'. Altitude 415 feet.*

	Jan.	Feb.	Mar.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1842....	11.43	17.14	26.41	34.04	46.66	56.15	65.40	65.07	49.93	40.92	30.05	13.53	35.70	62.21	40.30	14.03	38.06
1843....	19.90	10.17	23.18	38.40	49.03	57.96	60.16	64.74	.....	.....	.....	.....	36.87	60.95	.....	.....	.....
Mean...	15.66	13.66	24.80	36.22	47.84	57.06	62.78	64.90	49.93	40.92	30.05	13.53	36.29	61.58	40.30	14.28	38.11

### HANCOCK BARRACKS, MAINE.

*Latitude 46° 07', Longitude 67° 49'. Altitude 620 feet.*

	Jan.	Feb.	Mar.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1829....	11.86	15.15	25.32	41.31	56.44	61.70	60.08	62.46	49.29	42.19	26.94	25.77	41.02	61.41	39.47	17.59	39.87
1830....	6.95	13.54	27.92	46.18	52.46	60.80	68.12	64.40	53.95	47.49	38.65	27.19	42.19	64.44	46.70	15.89	42.30
1831....	12.51	19.19	31.31	38.23	56.71	66.16	68.73	67.70	57.44	46.28	36.07	8.64	42.08	67.53	46.59	13.44	42.41
1832....	17.41	12.68	27.57	33.06	49.40	55.60	62.16	66.33	57.44	46.36	31.46	15.41	36.70	61.37	45.09	15.17	39.58
1833....	14.14	11.69	23.56	39.77	53.72	53.30	65.66	61.24	52.88	45.65	31.26	24.62	39.02	60.73	42.26	16.82	37.46
1834....	10.12	23.89	27.20	42.55	47.67	59.62	68.48	63.45	59.41	41.94	30.67	11.24	39.14	63.85	44.01	15.68	40.52
1835....	16.70	13.72	23.28	37.07	47.18	59.79	64.99	62.93	53.23	48.03	27.97	9.74	35.84	62.57	43.08	13.39	38.72
1836....	16.41	11.51	28.37	37.65	49.22	62.73	67.35	62.62	55.18	28.10	30.10	17.19	38.42	61.23	41.13	15.04	39.70

## HANCOCK BARRACKS, MAINE—Continued.

*Latitude 46° 07', Longitude 67° 49'. Altitude 620 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1837....	16.09	16.27	27.03	39.42	49.98	60.79	63.24	63.09	56.85	41.20	29.10	17.96	38.81	62.37	42.38	16.81	40.09
1838....	20.60	13.63	34.76	36.93	50.62	67.02	68.27	63.49	56.44	41.13	27.59	14.28	40.74	66.26	41.72	16.17	41.22
1839....	16.66	19.41	27.43	42.92	48.43	57.85	67.01	63.89	56.52	45.14	31.16	25.48	39.59	63.58	44.27	20.52	41.99
1840....	9.81	23.66	28.77	41.39	52.46	61.64	67.84	68.10	56.16	43.50	31.96	15.97	40.87	65.86	43.87	16.48	42.02
1841....	21.52	15.83	26.87	34.88	48.67	57.09	64.86	67.70	59.48	39.13	32.77	23.32	36.81	63.22	43.79	20.22	41.01
1842....	15.17	20.84	30.91	38.18	46.93	58.76	65.79	66.24	52.82	43.98	31.39	14.90	38.67	62.04	42.73	17.04	40.12
1843....	22.44	12.72	25.98	41.47	50.75	59.38	62.00	64.75	51.50	41.00	27.66	20.75	39.40	62.04	40.05	18.64	40.03
1844....	6.45	18.07	25.62	41.63	48.90	60.37	60.66	61.75	55.48	42.74	28.72	17.50	38.72	60.93	42.31	14.01	38.99
1845....	15.39	16.89	26.82	37.47	48.77	60.01	62.92	64.82	.....	.....	.....	.....	37.69	62.58	.....	.....	.....
Mean { 17 yrs }	14.72	16.40	27.57	39.42	50.47	60.28	65.18	64.53	55.25	43.37	30.84	18.12	39.15	63.33	43.15	16.41	40.51

## FORT SULLIVAN, MAINE.

*Latitude 44° 54', Longitude 66° 58'. Altitude 170 feet.*

1822....	17.86	22.98	32.60	37.17	50.49	57.99	62.34	62.24	55.48	46.68	37.03	24.64	40.09	60.86	47.39	21.83	42.54
1823....	21.02	17.30	28.91	39.02	47.61	54.73	62.67	62.22	54.97	47.36	31.65	28.30	38.51	59.87	44.66	22.21	41.31
1824....	20.91	21.11	29.30	40.38	46.07	55.85	63.52	62.27	56.69	45.33	34.28	27.67	38.58	60.55	45.43	23.23	41.95
1825....	21.18	22.35	32.92	42.29	50.14	60.97	67.33	64.83	56.57	47.81	37.94	28.33	41.78	64.38	47.44	23.95	44.39
1826....	23.17	22.72	31.17	39.61	53.96	60.07	66.90	67.53	59.70	48.71	38.24	27.83	41.58	64.83	48.88	24.57	44.96
1827....	20.48	23.07	32.00	43.54	51.54	59.21	66.17	61.94	60.81	51.12	.....	.....	42.36	63.44	.....	.....	.....
1828....	22.44	29.61	31.62	37.52	50.08	57.47	61.50	65.00	58.42	47.19	38.53	26.18	39.74	61.31	48.05	26.08	43.79
1829....	19.57	21.29	29.32	40.93	51.79	58.01	61.08	61.49	53.24	45.89	37.35	31.67	40.68	60.19	45.49	24.28	42.66
1830....	18.17	19.42	31.05	44.08	49.69	57.07	63.63	61.76	54.37	48.61	41.92	32.37	41.61	60.82	48.30	23.32	43.51
1831....	19.87	24.57	35.45	42.81	55.83	60.27	67.48	66.58	58.96	48.97	39.93	14.77	44.69	64.78	49.29	19.80	44.64
1832....	25.78	20.35	28.52	35.88	49.25	54.36	57.53	62.11	55.07	48.08	36.43	23.37	37.88	58.00	46.86	23.17	41.42
1833....	23.18	20.19	29.23	41.95	50.27	54.68	62.09	60.50	58.28	48.51	36.46	29.90	40.48	59.09	47.75	24.42	42.93
1834....	19.48	29.99	33.21	43.32	47.77	58.29	62.71	61.04	58.64	46.00	36.96	20.42	41.43	60.68	47.20	23.30	43.17
1835....	24.34	22.20	29.40	38.11	49.09	55.38	60.50	59.67	57.02	50.45	36.22	17.28	38.20	58.32	47.90	21.27	41.43
1836....	21.49	17.99	27.73	37.74	45.47	55.13	.....	.....	.....	.....	.....	.....	36.98	.....	.....	.....	.....
1841....	30.13	23.97	31.34	36.30	45.05	56.68	60.82	62.10	60.36	44.25	36.42	28.85	37.56	59.87	47.01	27.65	43.02
1842....	23.95	27.96	32.75	39.77	47.77	53.15	63.69	61.41	54.91	45.45	36.10	22.88	40.09	59.41	45.49	24.93	42.48
1843....	29.07	20.30	27.40	40.48	49.26	57.08	61.28	61.18	56.48	47.72	35.38	27.56	39.05	59.85	46.53	25.64	42.77
1844....	16.17	25.61	33.40	45.48	50.33	58.01	59.19	60.57	58.75	49.08	36.89	27.16	43.07	59.26	48.24	22.98	43.39
1845....	23.63	24.11	31.45	40.78	47.07	57.45	60.24	63.24	.....	.....	.....	.....	39.77	60.31	.....	.....	.....
1849....	.....	.....	.....	.....	.....	.....	61.38	62.36	57.62	47.80	43.54	23.28	.....	.....	49.65	.....	.....
1850....	23.88	27.17	27.29	40.87	46.55	55.95	61.69	61.51	57.80	50.45	39.71	23.96	38.24	59.72	49.32	25.00	43.07
1851....	21.52	26.48	31.68	41.77	48.18	54.31	59.68	61.55	57.68	51.88	35.21	22.41	40.54	58.51	48.26	23.47	42.69
1852....	22.16	26.93	30.38	40.25	49.51	54.00	61.08	60.76	57.72	47.59	38.28	32.85	40.05	58.61	47.86	27.31	43.46
1853....	27.51	27.31	30.92	40.65	48.83	56.12	61.64	61.20	.....	.....	.....	.....	40.13	59.62	.....	.....	.....
Mean { 25 yrs }	22.37	23.54	30.79	40.44	49.23	56.76	62.33	62.42	57.25	47.95	37.35	25.79	40.15	60.50	47.52	23.90	43.02



FORT PREBLE, MAINE.

*Latitude 43° 39', Longitude 70° 20'. Altitude 20 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn.	Winter.	Year.
1824....	24.82	24.42	33.92	43.96	51.51	62.87	68.66	66.76	60.72	48.54	34.98	29.25	43.13	66.10	48.08	26.16	45.87
1825....	22.59	24.63	35.62	46.56	53.47	68.00	73.56	68.05	58.65	49.97	38.05	28.26	45.22	69.87	48.89	25.16	47.28
1826....	21.52	24.51	34.76	41.41	59.46	65.32	72.33	68.67	61.34	50.43	37.05	28.14	45.21	68.77	49.61	24.72	47.05
1827....	19.65	24.56	33.92	46.74	54.26	62.91	70.06	66.74	61.52	50.53	32.54	27.74	44.97	66.57	48.20	23.98	45.93
1828....	27.02	33.76	34.83	43.02	52.86	67.31	70.85	70.66	62.18	49.10	39.13	32.43	43.57	69.61	50.14	24.59	46.98
1829....	20.69	20.64	30.84	44.06	56.81	64.53	68.06	66.45	55.09	48.21	37.20	32.73	43.90	66.35	46.83	24.69	44.94
1830....	19.93	20.80	34.04	47.96	54.04	62.42	69.87	66.88	57.88	50.30	44.52	32.41	45.35	66.39	50.90	24.38	46.75
1831....	21.06	24.47	35.45	46.02	56.76	68.85	71.53	70.48	61.44	50.84	39.22	15.14	46.08	70.29	50.50	20.22	46.77
1832....	23.41	22.14	32.96	.....	.....	.....	63.80	66.30	60.00	51.51	39.35	26.97	.....	.....	50.29	24.17	.....
1833....	26.75	21.64	29.50	44.77	56.20	60.25	69.15	65.15	58.98	48.28	36.50	28.96	43.49	64.85	47.92	25.78	45.51
1834....	20.36	29.85	33.83	45.14	51.58	62.81	71.40	67.67	61.47	47.39	36.29	24.33	43.52	67.39	48.38	24.85	46.01
1835....	23.96	21.24	30.50	40.93	53.08	63.26	68.91	66.08	57.64	51.17	37.04	19.79	41.50	66.08	48.62	21.66	44.46
1841....	27.13	21.89	30.19	38.39	48.49	60.87	64.39	64.22	59.94	43.65	36.26	28.84	39.02	63.16	46.62	25.95	43.69
1842....	25.76	30.04	35.97	41.89	48.39	57.67	67.02	63.01	55.89	47.81	35.26	24.47	42.18	62.57	46.32	26.76	41.46
1843....	29.06	.....	26.89	40.68	49.73	58.36	62.89	65.38	56.40	46.73	34.38	29.09	39.10	62.21	45.84	.....	.....
1844....	14.36	21.82	31.03	43.00	51.25	60.75	63.00	62.75	58.00	47.25	35.90	26.25	41.76	62.17	47.05	20.81	42.95
1845....	23.67	22.50	30.97	40.70	51.85	62.27	65.52	66.17	56.57	.....	.....	.....	41.17	64.65	.....	.....	.....
1849....	.....	.....	.....	.....	.....	68.92	69.69	69.52	63.20	53.50	50.79	26.14	.....	69.38	41.87	.....	.....
1850....	24.69	27.41	31.77	40.25	49.47	62.26	66.65	64.86	58.40	50.27	40.02	22.40	40.50	64.59	49.56	24.83	44.87
1851....	20.01	25.28	33.30	42.60	51.61	58.71	66.59	65.19	60.00	51.56	35.09	20.56	42.50	63.50	48.88	21.95	44.21
1852....	18.43	23.04	29.41	39.10	51.96	63.71	68.33	64.70	59.11	48.16	36.38	32.00	40.16	65.58	47.88	24.49	44.53
1853....	23.25	25.84	33.41	42.02	53.66	63.24	68.12	65.34	.....	.....	.....	.....	43.03	65.57	.....	.....	.....
Mean { 22 yrs }	22.78	24.52	32.53	42.96	52.82	63.11	68.20	66.41	56.91	49.76	37.80	26.80	42.77	65.24	48.16	24.70	45.22

FORT CONSTITUTION, NEW HAMPSHIRE.

*Latitude 43° 04', Longitude 70° 49'. Altitude 20 feet.*

1824....	27.83	26.25	34.84	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1825....	27.13	28.50	37.60	46.54	53.59	65.59	71.32	64.90	59.23	51.38	39.41	32.96	45.91	67.27	50.00	29.53	48.18
1826....	28.84	31.79	36.31	43.05	58.65	62.71	68.54	67.61	61.88	51.73	40.50	30.21	46.00	66.29	51.37	30.28	48.48
1827....	21.31	26.88	35.52	47.63	53.61	61.75	67.64	65.16	60.44	51.40	33.87	29.42	45.59	64.85	48.57	25.87	46.22
1828....	29.37	35.47	36.14	42.91	59.25	64.05	69.16	68.36	62.24	50.40	41.85	35.01	46.10	67.19	51.50	33.28	49.32
1829....	24.38	22.79	31.29	43.86	56.11	62.64	65.65	65.00	55.72	48.54	39.52	36.48	43.75	64.43	47.93	27.88	46.00
1830....	22.92	23.28	35.45	46.84	53.15	62.76	69.12	66.36	57.95	51.38	46.04	33.40	45.15	66.08	51.79	26.53	47.39
1831....	21.78	25.28	39.50	45.64	55.03	66.58	68.86	68.52	60.06	51.71	40.74	17.07	46.72	67.99	50.84	21.37	46.73
1832....	25.69	25.65	34.76	40.12	50.42	59.65	63.31	64.62	57.36	51.30	40.77	29.36	41.76	62.53	49.81	27.34	45.36
1833....	28.66	23.48	30.69	44.96	55.11	59.41	66.77	63.43	58.81	48.73	37.49	31.13	43.59	63.20	48.34	27.42	45.64
1834....	20.10	31.98	34.49	44.13	51.07	60.32	68.14	64.62	60.91	47.39	39.21	27.21	43.23	64.36	49.17	26.43	45.80
1835....	26.29	24.22	31.54	41.83	52.59	61.35	65.97	63.32	56.61	50.77	38.65	22.52	41.99	63.55	48.78	24.34	44.66
1836....	25.41	19.69	30.17	39.67	50.70	55.76	65.73	60.48	57.11	44.50	36.63	28.47	40.18	60.66	46.08	24.52	42.86
1837....	21.80	24.14	30.25	41.45	48.24	59.12	62.34	61.20	55.41	47.30	37.94	29.12	39.98	60.89	46.88	25.03	43.19
1838....	31.83	19.20	34.64	38.71	49.99	63.13	68.10	64.51	58.05	46.67	34.51	25.65	41.11	65.25	46.41	25.56	44.58
1839....	25.89	27.66	32.72	43.62	50.62	57.77	65.33	64.09	59.06	50.62	37.34	31.66	42.32	62.40	49.01	28.40	45.53
1840....	18.65	31.98	33.70	45.70	53.13	61.75	66.58	65.09	58.06	.....	.....	.....	44.18	64.47	.....	.....	.....
1841....	.....	.....	.....	.....	.....	.....	.....	.....	.....	50.42	40.00	32.51	.....	.....	.....	.....	.....

FORT CONSTITUTION, NEW HAMPSHIRE - Continued.

*Latitude 43° 04', Longitude 70° 49'. Altitude 20 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter	Year.
1842....	28.38	30.71	37.19	42.26	50.61	57.46	65.61	64.87	57.33	48.74	37.66	25.09	43.35	62.65	47.91	28.06	45.49
1843....	31.69	19.55	26.58	43.81	55.25	64.30	68.45	69.80	62.13	47.69	35.71	28.83	41.88	67.52	48.51	26.69	46.15
1844....	17.85	25.32	34.17	45.40	53.39	61.91	64.56	63.79	59.73	48.68	38.26	29.46	44.32	63.42	48.89	24.21	45.21
1845....	26.00	24.99	33.86	42.01	52.99	61.28	67.86	66.80	.....	.....	.....	.....	42.95	65.31	.....	.....	.....
1849....	.....	.....	.....	.....	.....	.....	68.74	68.78	61.28	48.91	44.70	26.28	.....	.....	51.63	.....	.....
1850....	25.39	28.57	32.05	40.66	49.51	64.33	67.20	65.41	58.48	50.02	40.69	23.91	40.74	63.65	49.73	25.96	45.52
1851....	22.82	27.33	34.98	42.09	52.27	60.91	67.70	65.49	58.65	51.33	34.22	20.62	43.11	64.70	48.06	23.59	44.87
1852....	19.76	25.02	31.21	39.00	53.95	64.20	67.37	63.95	58.90	48.23	35.76	32.13	41.42	65.14	47.63	25.64	44.96
1853....	24.20	25.54	32.92	39.17	52.84	64.56	67.45	60.53	59.46	.....	.....	.....	41.64	64.18	.....	.....	.....
Mean } 25 yrs }	24.95	26.21	33.71	42.96	53.00	60.97	67.10	65.07	58.92	49.47	38.75	28.63	43.22	64.38	49.05	26.60	45.81

FORT INDEPENDENCE, BOSTON HARBOR, MASSACHUSETTS.

*Latitude 42° 20', Longitude 71° 00'. Altitude 50 feet.*

1824....	29.63	28.40	35.33	46.16	55.98	64.57	71.07	67.78	63.46	52.89	40.02	34.22	45.79	67.81	52.12	30.75	49.12
1825 ...	28.73	30.45	40.14	48.76	57.31	68.86	75.20	71.54	62.26	54.44	42.66	32.61	48.74	71.87	53.12	30.60	51.08
1826....	29.40	30.58	36.38	43.28	62.02	65.97	71.01	69.27	63.80	54.05	41.64	32.92	47.23	68.75	53.16	30.97	50.03
1827....	21.76	27.98	37.26	49.01	56.15	63.67	70.20	68.52	63.59	53.70	37.22	.....	47.47	67.46	51.50	.....	.....
1828....	31.48	36.14	38.06	43.44	55.62	67.06	70.71	71.21	64.26	53.18	44.15	36.75	45.71	69.66	53.86	34.96	51.05
1829....	26.58	22.89	30.46	46.09	57.55	.....	66.56	67.53	59.20	52.47	42.67	39.56	44.70	.....	51.45	29.68	.....
1830....	27.39	26.46	38.39	49.71	58.06	66.14	71.32	69.48	61.84	55.68	48.80	36.97	48.72	68.98	55.44	30.27	50.85
1831....	25.08	26.62	42.40	49.48	59.17	70.55	68.86	71.55	64.12	55.70	42.33	20.26	50.35	70.32	54.05	23.98	49.67
1832....	29.12	29.17	37.46	42.39	52.60	64.07	67.75	69.24	62.17	54.66	44.75	32.47	44.15	67.02	53.86	30.25	48.82
1833....	31.61	26.50	33.86	49.90	59.95	64.10	70.77	68.47	63.05	.....	.....	.....	47.90	67.78	.....	.....	.....
1834....	24.55	33.90	36.59	45.55	53.23	63.26	73.32	68.30	62.78	50.02	39.18	27.79	45.12	68.29	50.66	28.75	48.20
1835....	26.23	23.33	31.53	42.09	54.02	66.02	.....	.....	.....	.....	.....	.....	42.55	.....	.....	.....	.....
1836....	25.88	19.16	30.81	43.98	59.27	61.96	72.11	67.33	61.70	47.10	36.84	29.91	44.69	67.13	48.55	24.98	46.34
1837. ..	21.95	25.07	30.76	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1851....	.....	.....	.....	...	56.32	64.32	71.11	69.02	61.72	53.64	36.92	23.87	.....	68.15	50.76	.....	.....
1852....	23.19	28.50	32.98	41.26	56.51	65.22	72.09	66.75	62.91	51.81	39.75	36.58	43.58	68.02	51.49	29.42	48.13
1853....	27.98	30.33	37.58	45.67	57.15	67.57	71.17	69.98	63.98	50.72	41.93	28.67	46.60	69.58	52.21	29.00	49.40
1854....	25.52	25.00	32.92	42.41	58.76	65.91	74.07	69.70	63.71	55.29	44.27	26.95	44.70	69.89	54.42	25.82	48.71
Mean } 17 yrs }	26.83	27.67	35.46	45.57	57.04	65.57	71.08	69.10	62.78	53.02	41.54	31.39	46.02	68.58	52.45	28.63	48.92

WATERTOWN ARSENAL, MASSACHUSETTS.

*Latitude 42° 21', Longitude 71° 09'.*

1837....	21.51	25.92	31.52	44.20	53.70	63.68	67.69	65.16	59.15	49.09	40.07	29.36	43.07	65.51	49.64	25.59	45.91
1838....	32.96	19.01	35.64	41.30	54.57	68.21	74.04	69.98	62.25	47.53	35.72	26.71	43.83	70.74	48.50	26.22	47.35
1839 ...	27.24	28.05	36.41	47.92	55.56	61.34	71.79	69.00	63.25	52.49	37.58	30.57	46.63	67.37	51.10	28.62	48.43
1840....	19.18	33.45	37.09	47.66	56.75	66.16	72.56	71.15	60.82	51.38	38.78	27.18	47.17	69.95	50.32	26.60	48.51
1841....	30.82	26.40	35.28	.....	.....	.....	69.08	69.04	62.68	44.86	37.60	31.48	.....	.....	48.38	29.57	.....
1843....	31.69	19.55	26.58	43.81	55.25	64.30	68.45	69.80	62.13	47.69	35.71	28.83	41.88	67.52	48.51	26.69	46.15
Mean } 6 yrs }	27.23	25.40	33.75	44.98	55.17	64.74	70.60	69.02	61.71	48.84	37.58	29.02	44.63	68.12	49.38	27.22	47.34

FORT ADAMS, RHODE ISLAND.

*Latitude 41° 29', Longitude 71° 20'. Altitude 40 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1842....	32.36	35.43	40.25	46.02	55.20	64.60	73.11	71.59	63.13	52.24	38.06	30.92	47.15	69.76	51.14	32.90	50.23
1843....	34.40	24.45	29.80	45.16	55.42	65.28	73.32	72.87	64.69	51.30	37.13	33.31	43.46	70.46	51.01	30.72	48.66
1844....	23.79	29.02	35.62	47.69	57.56	66.80	71.00	71.11	63.48	53.63	42.73	34.20	46.96	69.64	53.28	29.00	49.72
1845....	32.49	28.91	37.75	44.92	53.55	64.36	71.83	72.22	62.84	53.87	46.67	29.28	45.41	69.47	48.35	30.23	48.36
1846....	30.67	25.70	36.35	45.83	54.52	63.37	70.55	69.94	65.27	.....	.....	.....	45.57	67.95	.....	.....	.....
1848....	.....	.....	.....	.....	.....	.....	.....	.....	.....	53.01	41.00	39.06	.....	.....	.....	.....	.....
1849....	26.01	24.82	38.15	44.90	53.19	67.04	71.49	71.81	63.50	52.94	50.38	34.56	45.41	70.12	55.61	28.46	49.90
1850....	33.34	34.07	35.40	42.74	53.04	65.04	72.63	70.03	63.64	55.49	45.98	32.72	43.73	69.25	55.04	33.38	50.35
1851....	33.03	34.55	38.56	46.33	55.81	64.50	71.71	69.13	63.40	56.79	41.10	28.38	46.90	68.44	53.76	31.99	50.27
1852....	26.49	30.03	35.26	42.15	55.15	65.72	72.33	69.35	63.76	54.62	42.72	40.56	44.19	69.13	53.70	32.36	49.84
1853....	30.85	33.20	38.34	45.34	56.36	67.48	72.87	70.84	64.65	.....	.....	.....	46.68	70.40	.....	... ..	.....
Mean { 10 yrs }	30.34	30.02	36.55	45.11	54.98	65.43	72.07	70.89	64.07	53.76	42.86	30.30	45.55	69.46	53.56	30.22	49.70

FORT WOLCOTT, NEWPORT HARBOR, RHODE ISLAND.

*Latitude 41° 30', Longitude 71° 20'. Altitude 20 feet.*

1822....	26.54	31.82	38.44	47.45	59.93	67.27	74.35	70.80	68.58	55.83	47.95	34.47	48.61	70.81	57.45	30.94	51.95
1823....	27.23	26.50	36.39	45.80	54.77	64.47	70.85	71.08	62.61	52.49	39.84	35.80	45.65	68.80	51.65	29.84	48.99
1824....	33.54	32.14	37.61	47.86	55.15	65.69	71.46	68.96	64.19	54.60	42.71	37.16	46.87	68.70	53.83	34.28	50.92
1825....	31.51	32.99	40.86	47.96	56.61	69.12	74.63	71.41	63.16	56.08	44.63	34.97	48.48	71.72	54.62	33.16	51.99
1826....	33.16	33.63	38.98	44.03	59.58	64.24	72.33	71.26	65.82	55.66	43.43	34.62	47.53	69.28	41.24	37.13	48.79
1827....	25.05	31.28	38.30	48.42	55.59	64.52	71.16	69.61	63.70	56.06	37.70	36.35	47.44	68.43	52.49	30.89	49.81
1828....	33.95	38.68	40.10	44.93	56.36	67.45	71.47	72.70	65.93	54.23	45.77	38.40	47.13	70.54	53.31	37.34	52.08
1829....	28.90	24.97	32.88	44.67	55.83	63.23	66.52	67.57	58.39	50.66	42.72	39.37	44.46	65.77	50.59	31.08	47.98
1830....	29.47	27.52	37.90	46.53	55.05	63.84	70.35	68.24	60.74	54.42	46.02	37.59	46.49	67.48	53.73	31.53	49.81
1831....	25.04	26.66	39.68	47.44	56.75	67.43	69.95	71.62	64.23	35.88	42.75	22.71	47.96	69.67	54.29	24.80	49.18
1832....	29.27	30.25	36.30	40.89	50.56	59.67	65.78	68.24	61.70	53.69	44.43	34.22	42.58	64.56	53.27	31.58	48.00
1833....	33.20	28.29	33.94	46.55	56.57	61.13	67.76	66.36	61.60	52.90	40.36	34.39	45.69	65.08	51.62	31.96	48.59
1834....	26.79	34.90	37.23	46.26	52.01	61.79	69.85	67.98	64.02	50.66	40.48	31.57	45.17	66.54	51.72	31.09	48.63
1835....	29.24	27.13	32.69	41.44	53.82	63.43	69.31	68.40	60.43	57.04	43.64	28.41	42.65	67.05	53.70	28.26	47.91
Mean { 14 yrs }	29.34	30.56	37.31	45.73	55.61	65.23	70.41	69.59	63.22	54.30	43.03	34.29	46.22	68.41	53.52	34.73	50.72

FORT TRUMBULL, CONNECTICUT.

*Latitude 41° 21', Longitude 72° 06'. Altitude 23 feet.*

1833....	.....	.....	.....	53.49	61.94	65.20	72.38	69.79	65.10	54.82	43.76	33.98	.....	69.12	54.56	.....	.....
1834....	27.11	36.14	38.37	50.16	57.37	66.85	75.80	71.67	65.42	48.78	38.66	29.90	48.63	71.44	50.95	31.05	50.52
1835....	27.79	26.68	34.12	44.61	57.93	68.85	73.33	70.93	59.43	56.10	43.36	26.96	45.55	71.04	52.96	27.14	49.17
1843....	32.59	19.97	25.85	44.68	53.88	63.65	67.67	69.03	63.21	49.01	36.81	31.25	41.47	66.78	49.68	27.94	46.47
1844....	20.92	27.23	35.28	48.80	57.00	63.95	68.44	68.40	61.47	50.18	39.59	29.20	47.03	66.93	50.41	25.78	47.54
1845....	31.44	28.77	37.94	45.06	54.00	63.16	70.23	71.35	62.56	54.36	46.39	27.93	45.67	68.91	54.44	29.38	49.60



## FORT TRUMBULL, CONNECTICUT—Continued.

*Latitude 41° 21', Longitude 72° 06'. Altitude 23 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1846....	30.19	25.62	38.81	48.10	55.62	.....	.....	.....	.....	.....	.....	.....	47.31	.....	.....	.....	.....
1849....	.....	.....	.....	.....	52.32	66.04	71.47	71.14	62.82	52.02	48.97	33.18	.....	69.55	54.60	.....	.....
1850....	33.31	33.90	36.10	43.32	53.69	67.18	72.69	69.27	62.77	54.78	44.82	31.52	44.37	69.71	54.12	32.91	50.28
1851....	32.22	33.15	39.28	47.30	56.25	65.40	72.08	68.91	63.67	55.07	39.88	27.69	47.61	68.79	52.87	31.02	50.07
1852....	25.85	30.53	35.90	43.12	57.63	66.88	72.34	69.15	63.37	54.63	41.20	39.45	45.55	69.45	53.07	31.94	50.00
1853....	29.60	33.59	39.25	46.68	58.01	68.23	71.74	71.32	66.15	.....	.....	.....	47.98	70.43	.....	.....	.....
Mean } 11 yrs }	29.10	29.56	36.09	46.85	56.30	66.12	71.56	70.12	63.27	52.97	42.34	31.11	46.41	69.27	52.86	29.92	49.62

## FORT COLUMBUS, NEW YORK HARBOR.

*Latitude 40° 42', Longitude 74° 01'. Altitude 23 feet.*

1822....	26.17	29.82	42.15	52.35	63.35	70.64	78.39	74.65	70.88	59.10	48.38	34.53	52.62	74.56	59.45	30.17	54.20
1823....	31.21	25.29	36.38	49.60	58.86	68.95	74.96	73.43	64.09	51.75	38.23	34.74	48.28	72.11	51.36	30.41	50.54
1824....	35.29	31.28	37.57	49.94	58.02	68.26	73.62	70.37	64.15	55.08	42.71	38.51	48.51	70.75	53.98	35.03	52.07
1825....	32.74	32.63	43.71	51.35	62.51	74.58	81.29	73.99	67.42	57.11	43.90	31.70	52.52	76.62	56.21	32.36	54.43
1826....	28.89	31.31	37.67	43.27	64.88	69.77	75.94	75.90	68.85	56.53	43.66	33.14	48.61	73.87	56.35	31.11	52.48
1827....	24.02	31.95	39.34	52.06	59.54	68.60	75.63	74.34	67.05	55.90	39.66	33.21	50.31	72.86	54.20	29.73	51.77
1828....	33.59	41.32	40.75	43.27	60.07	72.26	74.67	76.50	66.79	53.39	44.94	38.67	48.70	74.48	55.04	37.86	54.02
1829....	27.05	25.44	37.88	52.27	63.85	71.14	73.73	75.00	64.14	54.85	43.87	41.30	51.33	73.29	54.29	31.26	52.54
1830....	31.74	31.93	41.05	52.88	60.34	70.45	78.75	77.04	67.11	58.67	51.08	36.96	51.42	75.41	58.95	33.54	54.83
1831....	25.73	26.28	41.98	49.96	61.17	74.08	76.41	76.38	66.88	55.44	43.27	22.20	51.04	75.62	55.20	24.74	51.63
1832....	28.51	32.28	38.98	48.30	56.11	67.14	73.32	73.26	65.40	54.06	44.72	36.45	47.80	71.24	54.73	32.41	51.54
1833....	35.08	30.91	35.86	51.34	60.73	66.13	74.72	70.57	61.85	52.19	41.48	34.58	49.34	70.47	52.84	33.52	51.54
1834....	28.28	37.21	39.64	48.49	56.54	66.75	76.19	71.85	64.22	51.64	40.99	30.76	48.22	71.60	52.28	32.08	51.04
1835....	29.37	27.22	35.59	45.80	58.44	67.12	72.50	69.78	60.69	56.46	43.81	28.36	46.61	69.80	53.65	28.32	49.59
1836....	27.82	21.51	32.21	44.32	58.01	62.28	73.01	67.92	63.97	43.86	38.66	31.18	44.85	67.74	49.50	28.17	47.56
1837....	26.36	29.85	34.91	46.03	55.29	64.52	69.51	68.64	62.18	52.92	44.03	35.60	45.22	67.55	52.84	30.60	49.05
1838....	34.49	23.29	37.81	44.16	56.16	70.39	77.18	74.71	65.38	51.66	40.02	29.09	46.04	74.09	52.35	28.95	50.35
1839....	30.48	31.93	28.64	49.81	57.76	63.40	72.97	70.85	66.72	56.31	39.93	35.62	48.74	69.07	54.32	32.68	51.20
1840....	23.80	34.85	40.26	51.47	58.02	67.05	72.30	73.32	63.96	53.17	43.58	30.36	49.92	70.89	54.24	29.67	51.18
1841....	30.84	28.12	37.40	45.98	56.49	69.11	73.95	73.40	68.58	51.86	44.88	33.82	46.62	72.15	55.11	30.93	51.20
1842....	33.72	38.14	44.59	51.53	58.46	67.19	74.38	72.91	67.14	51.73	39.21	32.12	51.53	71.49	56.03	34.66	53.43
1843....	35.47	25.66	30.31	47.28	59.08	71.25	74.11	74.27	68.03	53.69	40.50	36.12	45.59	73.21	54.07	32.75	51.40
1844....	25.76	29.74	38.79	53.55	63.29	69.22	74.54	72.93	65.79	53.52	43.33	33.97	51.88	72.23	54.21	29.82	52.03
1845....	35.03	31.95	42.12	50.79	60.54	71.30	76.60	76.04	65.49	55.31	45.68	28.27	51.15	74.65	55.49	31.75	53.26
1846....	31.37	27.41	39.31	50.33	60.41	67.36	72.21	73.25	69.71	54.00	48.15	33.90	50.02	70.94	57.29	30.89	52.28
1847....	32.40	31.60	36.01	49.50	59.51	70.84	75.61	72.30	64.73	51.40	46.04	37.90	48.34	72.92	54.06	33.97	52.32
1848....	33.79	31.21	36.14	50.10	61.36	69.11	74.28	73.54	63.44	54.15	39.74	39.29	49.87	72.31	52.44	34.76	52.34
1849....	25.78	24.68	37.84	47.55	55.00	69.50	72.80	72.33	64.31	52.64	48.19	32.07	46.80	71.54	55.05	27.51	50.22
1850....	32.78	33.42	36.16	44.08	54.45	68.63	75.06	71.04	64.32	53.78	45.19	33.22	44.90	71.24	54.43	33.14	50.93
1851....	32.15	33.68	39.71	49.13	58.24	68.45	75.64	74.00	67.86	57.32	42.24	27.39	49.02	72.69	55.80	31.07	52.15
1852....	24.33	30.74	36.72	43.73	60.30	69.70	76.61	73.27	63.77	55.61	41.64	40.45	46.92	73.19	53.67	31.84	51.40
1853....	32.08	33.50	39.58	48.13	60.25	71.20	72.77	73.52	66.41	52.01	44.31	33.13	49.32	72.50	54.24	32.90	52.24
1854....	28.71	28.17	36.17	45.09	59.96	68.49	75.89	72.88	66.35	55.71	43.67	27.52	47.07	72.42	55.24	28.13	50.71
Mean } 33 yrs }	30.18	30.44	38.28	48.65	59.30	68.30	74.83	73.16	65.78	54.19	43.32	33.52	48.76	72.10	54.43	31.38	51.67

NOTE.—The record for 1837 and 1838 was at *Fort Wood*, *Bedloe's Island*; so near that it is incorporated in the mean for the series at *Fort Columbus*.

## FORT HAMILTON, NEW YORK HARBOR.

*Latitude 40° 37', Longitude 74° 02'. Altitude 25 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1843....	37.27	26.80	30.80	48.50	56.90	68.40	71.90	74.40	68.45	53.95	42.10	35.15	45.40	71.57	54.83	33.07	51.92
1844....	26.29	29.82	38.04	51.51	61.50	66.87	71.39	71.82	66.07	53.10	43.42	34.00	50.35	70.03	54.20	30.04	51.15
1845....	34.55	31.91	41.61	49.59	58.33	68.73	74.48	75.42	65.97	57.24	47.18	28.97	49.84	72.88	56.80	31.81	52.83
1846....	31.94	27.04	40.03	49.26	50.27	65.67	71.96	73.04	69.96	54.32	49.15	35.19	49.52	70.22	57.81	31.39	52.23
1847....	32.80	32.26	36.71	45.50	54.97	64.84	74.74	72.69	65.24	54.44	47.23	37.75	45.73	70.76	55.64	34.27	51.60
1848....	35.67	31.14	35.33	48.59	59.91	67.66	71.08	73.10	63.96	55.00	41.19	39.98	48.28	70.61	53.38	35.60	51.97
1849....	26.74	25.85	38.33	46.10	54.13	69.01	71.57	72.57	65.02	53.06	49.72	33.89	46.19	71.05	55.93	26.62	49.95
1850....	34.25	35.37	37.17	45.00	54.35	68.90	73.32	72.12	66.55	55.72	47.05	34.67	45.51	71.35	56.44	34.76	52.01
1851....	34.90	36.40	40.72	48.95	58.62	67.50	73.56	70.67	65.35	58.32	43.67	31.00	49.43	70.57	55.75	34.10	52.46
1852....	25.42	30.48	40.20	46.20	58.32	68.70	74.02	71.02	67.60	58.72	44.91	39.01	48.24	71.24	57.08	31.64	52.05
1853....	29.72	33.17	39.92	46.73	58.63	69.00	73.52	74.22	67.66	52.86	46.91	33.53	48.43	72.25	55.81	32.14	52.16
1854....	31.49	30.95	37.70	45.57	59.37	68.69	77.17	74.67	67.06	56.15	43.90	28.31	47.55	73.51	55.70	30.25	51.75
Mean } 12 yrs }	31.67	30.93	38.05	47.62	57.86	67.83	73.23	72.98	66.57	55.24	45.55	34.28	47.84	71.35	55.79	32.29	51.82

## WEST POINT, NEW YORK.

*Latitude 41° 23', Longitude 74° 00'. Altitude 167 feet.*

1824....	32.08	29.71	26.91	51.70	61.06	68.95	77.31*	75.36*	64.11	59.22*	42.29*	39.27*	49.89	73.88	55.21	33.69	53.17
1825....	31.55*	31.97*	44.73*	47.61*	59.34*	.....	.....	.....	.....	58.11	44.34	33.76	50.56	.....	.....	32.43	.....
1826....	29.61	32.25	39.11	46.41	68.17	71.90	75.11	73.74	67.00	56.06	43.93	32.02	51.23	73.58	55.66	31.29	52.94
1827....	23.31	31.87	40.58	54.66	61.94	69.30	72.98	72.90	65.48	54.45	37.90	34.95	52.39	71.73	52.61	30.04	51.69
1828....	33.42	39.39	41.77	47.72	61.76	73.85	75.41	76.58	68.64	55.99	45.03	39.97	50.42	75.28	56.55	37.59	54.96
1829....	27.10	22.83	34.80	49.72	64.31	69.66	72.50	71.34	60.61	53.16	41.71	40.15	49.61	71.17	51.83	30.03	50.66
1830....	28.05	27.01	40.07	54.19	59.62	69.13	75.69	75.35	66.73	48.82	49.91	37.33	51.29	73.39	55.15	34.13	53.49
1831....	24.41	23.98	42.50	51.84	62.63	74.85	73.77	74.39	65.82	56.87	44.73	26.17	52.32	74.34	55.81	24.85	51.83
1832....	30.19	30.63	40.33	48.24	58.85	66.24	71.70	70.83	62.81	55.48	45.45	34.50	49.14	69.59	54.58	31.77	51.24
1833....	33.12	27.96	35.32	54.47	63.07	66.93	72.50	71.40	66.84	53.45	40.94	33.80	50.95	70.27	53.74	31.63	51.65
1834....	26.33	35.87	39.60	51.24	59.05	67.44	76.82	73.92	65.41	51.62	40.82	30.31	49.96	72.76	52.62	30.84	51.54
1835....	26.83	25.40	36.40	46.73	59.70	67.92	74.27	71.24	61.00	59.00	43.21	25.91	47.61	71.14	54.40	26.65	49.80
1836....	27.17	20.69	32.23	45.69	60.94	65.56	73.41	67.55	64.85	47.35	39.23	29.19	46.29	68.84	50.48	25.68	47.82
1837....	21.78	27.54	32.61	45.45	56.61	67.16	71.60	69.79	61.76	51.31	42.13	31.23	44.89	69.52	51.73	26.85	48.25
1838....	34.68	21.98	38.62	42.55	56.90	71.92	77.81	74.57	67.07	54.27	40.43	29.05	46.02	74.77	53.92	28.57	50.82
1839....	28.41	32.59	40.76	53.80	60.80	65.43	73.68	68.09	64.30	56.37	39.68	32.92	51.79	69.07	53.45	31.31	51.40
1840....	23.12	36.71	41.13	50.83	60.43	67.30	74.16	73.82	63.30	53.61	43.53	29.13	50.80	71.76	53.48	29.65	51.42
1841....	29.69	26.01	36.16	45.84	57.33	71.90	73.90	72.38	67.25	45.99	39.02	35.24	46.44	72.73	50.75	30.31	50.06
1842....	35.17	39.55	46.65	54.25	59.19	67.10	74.76	70.52	63.82	57.04	43.20	31.31	53.36	70.79	54.69	35.34	53.54
1843....	33.40	21.40	26.77	47.20	59.00	71.00	74.96	71.79	66.46	48.81	36.41	30.23	44.32	72.58	50.56	28.34	48.95
1844....	19.10	26.03	36.00	53.04	61.69	67.42	71.37	68.99	62.40	49.81	32.27	30.06	50.24	69.26	50.49	25.06	48.76
1845....	28.53	28.20	39.62	48.06	57.79	69.06	74.36	74.18	61.79	52.60	43.32	24.12	48.49	72.53	52.57	26.95	50.13
1846....	27.48	23.65	37.33	50.00	60.25	67.32	72.25	72.55	69.07	51.26	45.26	30.74	49.19	70.71	55.19	27.29	50.59
1847....	28.90	28.20	32.45	45.19	58.38	64.83	75.35	73.03	63.36	50.48	44.45	35.77	45.34	71.07	53.10	20.96	50.12
1848....	32.40	28.74	34.36	48.52	60.78	68.46	71.15	71.52	61.48	51.17	37.41	36.20	47.89	70.38	50.02	32.78	50.27
1849....	23.98	21.85	37.34	46.22	55.35	67.47	71.90	69.63	61.85	50.46	47.60	31.45	46.30	69.67	53.30	25.76	48.76

\* Extreme hours in excess, or thermometer protected. \*\* Thermometer removed from a large to a small building in June, 1825. The apparent defects of position in the first two years of the record do not sensibly affect the mean results.

WEST POINT, NEW YORK—Continued.

*Latitude 41° 23', Longitude 74° 00'. Altitude 167 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1850....	30.75	32.75	35.46	44.62	53.49	63.49	73.03	68.69	61.67	51.91	42.87	29.37	44.52	68.40	52.15	30.96	49.01
1851....	29.45	32.26	38.64	46.85	57.13	65.51	71.62	68.65	63.74	53.89	38.48	25.00	47.54	68.59	52.03	28.90	49.27
1852....	21.57	28.69	33.36	42.49	58.40	68.30	72.90	67.75	61.78	53.56	39.98	36.46	44.75	69.65	51.77	28.91	48.77
1853....	26.28	29.70	38.60	48.83	59.88	69.14	70.80	71.39	64.76	50.59	44.38	30.44	49.10	70.44	53.24	28.81	50.40
1854....	28.00	27.40	36.35	45.91	60.57	68.06	75.59	72.75	64.25	53.69	42.39	25.50	47.61	72.13	53.44	26.97	50.04
Mean (31 yrs.)	28.28	28.80	37.63	48.70	59.82	68.41	73.75	71.83	64.31	53.04	42.23	31.98	48.72	71.33	53.19	29.69	50.73

WATERVLIET ARSENAL, NEW YORK.

*Latitude 42° 43', Longitude 73° 43'. Altitude 50 ½ feet.*

1824....	25.87	25.47	32.47	48.43	59.04	68.02	73.61	71.24	66.00	54.01	40.56	34.34	46.65	70.96	53.52	28.56	49.92
1825....	26.58	29.06	39.96	49.91	62.11	70.22	78.67	73.34	60.99	53.01	36.80	30.02	50.66	74.07	50.27	28.55	50.89
1826....	27.46	27.71	36.87	44.71	67.23	70.83	73.10	73.16	63.03	51.96	41.37	29.33	49.60	72.36	52.79	28.17	50.73
1827....	17.11	26.64	33.40	50.62	59.78	70.15	74.54	71.04	64.11	50.71	33.14	27.01	47.93	72.18	49.32	23.59	48.26
1828....	28.43	31.92	38.55	43.33	62.82	73.16	74.89	75.77	64.63	52.62	41.88	32.18	48.23	74.61	53.04	30.84	51.68
1829....	21.63	15.56	29.88	41.25	63.38	70.20	72.93	72.48	58.67	51.97	39.70	36.06	46.50	71.87	50.11	27.42	48.97
1830....	23.57	21.03	39.20	51.60	57.13	67.58	76.34	72.76	61.40	48.82	45.08	33.50	49.31	72.29	51.77	25.70	49.77
1831....	20.82	19.25	39.04	49.10	60.01	71.69	73.73	71.36	62.40	53.55	40.93	14.03	49.38	73.26	52.29	18.03	48.24
1832....	22.10	22.86	34.97	44.61	54.49	68.87	71.06	68.73	61.44	49.94	38.75	29.03	44.69	69.55	50.04	24.66	47.23
1833....	.....	.....	.....	44.97	55.97	60.77	73.77	69.32	62.65	48.08	35.75	28.78	.....	67.96	48.83	.....	.....
1834....	20.59	32.84	34.98	49.95	57.30	68.00	77.66	73.21	64.51	46.15	38.45	24.43	47.41	72.97	49.70	25.95	49.01
1835....	19.60	20.25	31.85	43.99	58.84	67.90	72.26	68.83	59.31	52.58	37.35	19.36	44.93	69.66	49.76	19.74	46.02
1836....	21.94	14.01	26.80	42.29	58.91	66.38	72.46	65.06	61.83	41.95	35.32	24.93	42.67	67.97	46.37	20.29	44.32
1837....	15.18	23.03	29.07	42.58	54.99	65.44	70.37	69.03	58.67	49.11	41.36	26.84	42.21	68.61	49.71	21.68	45.55
1838....	28.71	14.66	34.84	37.19	57.49	70.91	75.90	72.15	62.95	48.53	36.67	21.12	43.17	72.99	49.38	21.50	46.78
1839....	21.92	25.42	31.92	49.34	58.24	63.49	73.42	70.40	62.44	51.62	36.37	28.81	46.50	69.10	50.14	25.38	47.78
1840....	15.01	31.20	35.51	49.89	61.26	66.46	73.67	71.10	59.43	50.30	38.15	26.85	48.89	70.41	49.29	24.35	48.23
1841....	28.22	22.53	32.39	41.22	56.82	70.18	72.51	71.90	67.34	45.54	38.40	29.55	43.48	71.53	50.43	26.77	48.05
1842....	30.31	36.28	41.99	53.14	57.89	66.43	72.69	69.69	58.10	46.38	31.70	23.22	51.01	69.60	46.39	29.94	49.23
1843....	29.00	15.30	25.19	42.70	59.42	66.15	72.90	71.60	66.15	46.43	38.56	31.20	42.44	70.22	50.38	25.17	47.05
1844....	14.15	24.03	35.29	53.44	60.72	65.13	68.17	71.87	61.82	46.71	35.31	30.52	49.82	68.39	47.95	22.90	47.26
1845....	25.78	26.84	40.65	48.34	55.86	69.31	74.51	72.47	55.61	48.86	39.80	17.18	48.28	72.10	48.09	23.27	47.93
1846....	16.98	17.39	29.85	47.07	60.15	67.50	71.87	71.98	66.78	47.89	42.45	25.43	45.69	70.45	52.37	19.93	47.11
1847....	25.98	21.72	28.52	42.83	59.29	66.90	73.95	71.44	62.36	47.10	44.03	32.30	43.55	70.76	51.16	26.67	48.03
1848....	30.06	23.48	31.77	47.51	62.00	69.92	71.88	71.89	55.36	48.97	39.43	33.66	47.09	71.23	47.92	29.07	48.83
1849....	19.81	16.48	36.14	42.36	54.28	68.12	73.58	69.14	60.49	47.56	43.14	25.54	44.26	70.28	50.40	20.61	46.39
1850....	22.52	25.33	30.29	40.94	53.44	68.22	76.13	67.64	59.20	48.05	39.03	21.40	41.56	70.66	48.76	23.08	46.01
1851....	22.03	27.81	37.35	45.06	57.94	66.67	72.14	68.60	61.83	52.16	36.00	22.01	46.98	69.13	50.00	23.96	47.52
1852....	16.67	25.77	32.63	44.42	60.69	68.68	75.44	71.54	61.78	56.60	39.75	37.62	45.91	71.89	52.71	26.69	49.30
1853....	30.14	30.86	37.78	42.88	55.29	69.55	70.74	70.39	61.38	45.46	39.02	25.67	45.32	70.23	48.62	28.89	48.26
1854....	21.86	19.54	31.55	41.27	54.89	67.10	77.17	69.77	61.44	48.18	38.67	19.38	42.90	71.35	49.43	20.26	45.99
Mean (31 yrs.)	23.97	23.81	34.02	45.84	58.70	68.22	73.61	70.93	61.84	50.67	38.90	27.14	46.19	70.92	50.47	24.64	*48.05

\* Mean of 22 years at the Albany Academy, New York University system, 48.30 degrees.



PLATTSBURG BARRACKS, NEW YORK.

*Latitude 44° 41', Longitude 73° 25'. Altitude 186 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1839....	16.72	22.43	31.25	45.13	57.97	66.28	72.04	68.75	59.93	48.12	32.88	24.94	44.78	69.02	46.98	21.36	45.53
1840....	12.62	26.37	29.33	44.21	60.67	67.17	72.11	69.39	58.13	46.47	32.45	19.41	44.73	69.56	45.08	19.46	44.85
1841....	23.98	.....	.....	.....	.....	.....	67.52	67.45	60.37	42.77	33.10	25.37	.....	.....	45.41	.....	.....
1842....	20.70	25.31	33.75	42.90	50.92	60.13	67.61	68.92	56.81	45.53	33.86	19.25	42.52	65.55	45.40	21.75	43.80
1843....	26.45	13.78	25.95	43.75	57.30	65.41	69.16	71.22	64.78	46.53	36.25	24.79	42.33	68.60	49.19	23.01	45.78
1844....	10.33	19.68	30.20	47.74	55.04	61.01	66.30	64.90	58.57	42.89	29.19	18.95	44.36	64.07	43.55	16.32	42.07
1845....	18.68	19.50	30.85	39.87	51.41	63.81	67.42	68.15	54.65	48.17	37.15	16.02	40.70	66.46	46.66	18.07	42.97
1846....	18.70	12.82	31.05	44.02	54.72	61.52	.....	.....	.....	.....	.....	.....	43.26	.....	.....	.....	.....
1849....	.....	.....	.....	.....	.....	.....	70.00	68.48	57.57	46.03	41.94	22.10	.....	.....	48.51	.....	.....
1850....	21.45	24.46	28.80	37.94	49.64	65.39	62.97	64.96	58.88	46.86	38.95	19.32	38.46	66.44	48.23	21.74	43.72
1851....	18.62	24.20	30.28	42.08	52.91	61.65	66.96	66.37	59.39	51.57	30.49	19.07	41.75	64.99	47.15	20.63	43.63
1852....	13.90	21.05	27.22	38.66	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean } 11 yrs }	18.37	20.96	29.88	42.63	54.51	63.60	68.81	67.86	58.91	46.49	34.62	21.32	42.34	66.76	46.67	20.22	44.00

NOTE.—The first three months of 1839 were observed at *Rouse's Point*.

Mean temperature at Vermont University, Burlington, for eleven years—1842 to 1852—44.74 degrees. Observations by Professor Thompson, Hist. Vermont, 1853.

MADISON BARRACKS, SACKETT'S HARBOR, NEW YORK.

*Latitude 43° 57', Longitude 76° 15'. Altitude 262 feet.*

1824*...	28.41	27.56	31.77	45.15	52.13	63.26	69.17	67.42	62.93	49.77	36.84	33.07	43.02	66.62	49.85	29.68	47.31
1825....	25.51	30.46	36.23	.....	.....	.....	72.69	71.91	62.57	55.27	41.42	29.34	.....	.....	53.09	28.44	.....
1826....	27.92	30.90	35.58	41.30	61.65	69.60	72.36	73.02	62.80	53.58	39.31	25.69	46.18	71.63	51.90	28.17	49.47
1827....	14.29	20.56	30.73	42.96	53.34	63.11	69.03	64.25	.....	.....	.....	.....	42.34	65.46	.....	.....	.....
1828....	25.77	29.28	35.05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1829....	21.44	20.61	28.07	45.27	60.54	68.48	70.29	71.59	59.52	51.23	37.01	36.11	44.63	70.12	49.27	26.05	47.52
1830....	20.35	22.40	36.02	54.03	57.90	65.07	74.62	69.65	61.09	53.81	45.46	32.62	49.32	69.78	53.45	25.12	49.42
1831....	18.23	22.25	41.41	48.99	58.15	72.88	72.34	71.88	64.40	55.56	41.63	19.95	49.52	72.37	53.86	20.14	48.97
1832....	27.58	25.79	39.11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1833....	.....	.....	.....	.....	.....	.....	.....	.....	.....	47.28	32.92	23.94	.....	.....	.....	.....	.....
1839....	.....	.....	.....	49.08	55.74	60.12	70.87	68.46	59.43	51.95	37.21	27.73	.....	66.48	49.53	.....	.....
1840....	15.45	30.73	33.50	.....	.....	.....	70.85	71.69	58.76	47.51	36.85	23.12	.....	.....	47.71	23.10	.....
1841†....	.....	23.60	.....	.....	.....	.....	67.10	.....	.....	.....	.....	.....	38.50	66.62	47.11	27.35	41.89
1842....	26.01	29.11	37.30	45.06	50.44	59.91	65.89	66.69	56.30	47.91	34.39	24.76	44.26	64.15	46.20	26.62	45.30
1843....	30.24	14.18	23.30	42.30	51.15	59.23	66.20	67.20	59.37	44.30	34.20	29.19	38.92	64.21	45.96	24.54	43.41
1844....	12.74	20.99	30.60	48.94	56.00	62.13	66.90	66.15	60.63	44.69	33.79	25.00	45.18	65.06	46.37	19.91	44.13
1845....	21.73	21.85	34.61	43.06	50.74	62.00	66.88	68.92	56.85	49.94	37.76	17.88	42.80	65.93	48.18	20.39	44.32
1846....	21.53	16.16	31.62	45.44	56.83	63.64	.....	.....	.....	.....	.....	.....	44.63	.....	.....	.....	.....
1849....	.....	.....	32.66	41.91	53.46	67.12	72.04	71.09	61.42	48.93	46.08	25.11	42.68	70.08	52.14	.....	.....
1850....	25.05	24.43	30.49	40.55	50.91	67.90	72.13	68.88	60.06	48.02	40.32	19.73	40.65	69.64	49.47	23.07	45.71
1851....	22.31	27.80	34.34	41.93	54.12	62.01	68.52	65.45	59.18	50.60	32.26	22.49	43.46	65.32	47.35	24.53	45.17
1852....	14.93	23.03	28.79	39.05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean } 16 yrs }	22.19	24.30	33.22	44.69	54.87	64.43	69.86	69.02	60.45	50.02	37.65	25.98	44.26	67.77	49.34	24.16	46.38
Mean } last 8 yrs }	21.82	22.70	31.52	43.14	52.96	63.00	69.75	67.77	59.12	47.91	36.97	23.45	42.54	68.84	48.00	22.66	45.01

\* Observations taken at 6, 2, and 7, in the second quarter, and apparently near these hours, through 1824, 1825, and 1826. They are generally incomplete to 1828, inclusive.

† The monthly records for 1841 are lost.

The mean at Toronto, latitude 43° 39' 06", for 12 years, from 1841 to 1852, 44.23 degrees—corrected to absolute mean temperature, as for hourly observations by Col. Sabine. The mean for the corresponding and carefully observed years of this series is very nearly accordant with that at Toronto.

## FORT ONTARIO, NEW YORK.

*Latitude 43° 20', Longitude 76° 40'. Altitude 250 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1843....	30.84	17.97	24.27	42.76	51.25	59.06	66.09	68.50	61.50	45.10	34.30	30.50	39.43	64.55	46.97	26.44	44.35
1844....	17.40	24.95	33.35	49.65	57.57	61.72	68.57	65.82	61.07	45.00	35.85	27.60	46.86	65.37	47.31	23.32	45.71
1845....	25.66	25.77	36.46	43.09	49.74	61.83	67.44	69.06	58.50	49.89	39.55	22.04	43.10	66.11	49.31	24.49	45.78
1846....	21.70	21.36	31.17	45.02	56.52	64.18	.....	.....	.....	.....	.....	.....	44.24	.....	.....	.....	.....
1849....	20.29	19.45	34.04	41.98	51.20	66.01	73.50	70.97	61.00	45.77	44.25	26.90	42.41	70.16	50.34	22.21	46.28
1850....	27.27	27.06	31.36	40.18	47.79	63.96	70.29	69.58	60.85	48.40	41.28	23.68	39.78	68.61	50.18	26.00	46.14
1851....	25.69	29.74	34.71	42.12	52.06	61.67	68.82	66.69	63.07	50.89	34.54	23.37	42.96	65.72	49.50	26.27	46.11
1852....	19.07	24.98	30.67	37.49	53.26	62.46	69.60	67.59	59.26	50.24	35.20	32.07	40.47	66.55	48.23	25.37	45.15
1853....	24.87	24.73	31.92	41.31	49.00	66.44	69.12	.....	.....	.....	.....	.....	40.74	.....	.....	.....	.....
1854....	.....	.....	.....	.....	.....	.....	.....	.....	.....	48.37	38.78	23.57	.....	.....	.....	.....	.....
Mean (9 yrs.)	23.98	24.00	32.00	42.62	56.49	63.26	69.18	68.31	61.03	46.71	37.97	26.21	43.70	66.92	48.57	24.73	45.98

## FORT NIAGARA, NEW YORK.

*Latitude 43° 18', Longitude 79° 08'. Altitude 250 feet.*

1829....	27.78	21.65	32.72	45.46	59.45	69.27	70.76	71.54	60.78	55.51	38.89	39.62	45.88	70.52	51.72	29.68	49.42
1830....	25.94	28.76	36.06	49.59	60.09	68.52	.....	.....	.....	.....	.....	.....	48.58	.....	.....	.....	.....
1831....	25.63	25.55	42.23	45.02	57.65	71.92	73.57	71.67	62.50	55.76	41.72	24.19	48.30	72.38	53.33	25.12	49.78
1833....	.....	.....	.....	51.17	62.12	66.34	72.72	73.35	66.99	.....	.....	.....	.....	70.80	.....	.....	.....
1840....	22.18	31.69	34.81	44.01	56.89	60.44	70.20	70.72	59.08	49.94	39.98	28.26	48.27	67.14	49.66	27.37	48.11
1842....	30.53	30.20	38.54	45.10	52.49	59.08	68.34	67.77	60.78	51.51	35.75	28.70	45.37	65.66	49.34	29.81	47.54
1843....	31.80	20.08	25.74	41.75	50.64	61.31	68.70	69.38	63.70	45.95	34.48	32.14	39.38	66.46	48.04	28.01	45.47
1844....	22.17	28.70	33.78	48.28	57.24	61.66	67.20	65.30	61.35	45.84	38.40	31.74	46.43	64.72	48.53	27.54	46.80
1845....	29.02	29.17	38.83	44.55	55.00	65.01	70.58	70.32	60.73	50.67	39.45	24.33	46.13	68.64	50.25	27.51	48.14
1846*....	28.75	24.57	35.20	44.41	55.07	62.83	.....	.....	.....	.....	.....	.....	44.89	.....	.....	.....	.....
1849....	.....	.....	.....	.....	.....	.....	69.84	68.27	61.45	50.03	47.51	29.44	.....	.....	52.99	.....	.....
1850....	29.77	28.51	32.47	39.98	52.39	67.65	72.19	69.29	59.32	49.43	43.96	27.59	41.61	69.71	50.67	28.62	47.65
1851....	28.69	30.36	35.52	41.79	53.59	63.58	68.67	66.93	61.58	51.66	36.55	27.02	50.85	69.25	50.89	32.38	50.84
1852....	21.68	26.97	30.57	38.53	53.18	63.10	69.37	69.17	60.73	51.91	37.04	34.54	40.76	67.21	49.89	27.73	46.39
1853....	27.35	27.64	34.00	42.54	55.88	69.17	69.92	72.90	62.84	47.53	41.30	28.37	44.14	71.00	50.56	27.79	48.37
1854....	25.04	23.23	32.37	41.41	54.98	67.58	72.84	69.62	64.02	.....	.....	.....	42.92	70.01	.....	.....	.....
Mean (14 yrs.)	26.85	26.93	34.49	44.24	55.77	65.16	70.35	69.73	61.77	50.48	39.53	29.66	44.83	68.41	50.59	27.81	47.91

\* The record was evidently from a thermometer in a building or protected position for most of the period. Some of the early years were quite inaccurate, and portions of these have been omitted.

## BUFFALO BARRACKS, NEW YORK.

*Latitude 42° 53', Longitude 78° 58'. Altitude 660 feet.*

1841....	25.24	21.26	26.97	35.85	48.81	63.31	63.23	67.83	64.30	44.21	37.35	30.83	37.21	65.45	48.62	25.77	44.26
1842....	29.92	29.45	38.58	45.41	55.12	61.90	68.07	68.44	59.24	48.86	35.10	26.46	46.37	66.33	47.73	28.63	47.26
1843....	30.80	18.17	19.20	43.30	52.10	63.04	69.20	71.15	63.19	45.12	34.10	32.80	38.20	67.80	47.47	27.26	45.18
1844....	22.40	27.38	33.19	50.88	56.48	65.30	69.33	66.72	61.34	45.46	36.78	30.09	46.85	67.12	47.86	26.62	47.11
1845....	28.07	28.36	37.23	45.56	52.21	64.75	70.61	.....	.....	.....	.....	.....	45.00	.....	.....	.....	.....
Mean (4 yrs.)	27.30	24.92	31.05	44.20	52.95	64.06	68.31	68.53	62.02	45.91	35.83	30.04	42.73	66.93	47.92	27.42	46.25

## ALLEGHANY ARSENAL, PITTSBURG, PENNSYLVANIA.

*Latitude 40° 32', Longitude 80° 02'. Altitude 704 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1825....	31.15	37.49	45.15	50.40	64.06	71.80	76.04	74.05	63.09	54.50	39.41	30.85	53.20	73.96	52.30	33.16	53.15
1826....	28.13	33.97	43.69	.....	.....	.....	74.24	72.67	66.48	56.79	43.93	34.70	.....	.. ..	55.73	32.27	.....
1827....	26.08	39.54	48.40	57.24	62.33	69.08	74.49	74.16	65.93	51.54	42.69	41.83	55.99	72.91	54.39	35.82	54.78
1836....	28.75	20.13	31.55	54.09	74.60	73.02	74.72	68.49	62.24	38.15	30.84	22.40	53.08	72.08	43.74	23.76	48.16
1837....	16.79	25.65	27.74	31.26	59.69	70.33	74.44	72.00	57.43	52.30	42.94	32.31	39.56	72.26	50.89	24.92	46.91
1838....	33.22	18.49	41.55	44.95	53.96	71.68	77.79	74.57	66.05	55.47	40.23	22.28	46.82	74.68	50.58	24.66	49.18
1839....	30.68	32.55	37.09	54.82	60.97	65.28	72.92	69.80	63.48	57.99	35.99	30.32	50.96	69.37	52.49	31.18	51.00
1840....	21.79	39.12	40.25	53.13	61.73	69.59	71.15	69.50	59.64	52.05	39.45	29.39	51.70	70.08	50.38	30.10	50.56
1841....	29.95	29.56	38.24	47.50	57.51	70.86	63.26	68.15	66.12	46.50	41.14	30.53	48.08	67.42	51.25	30.01	49.19
1842....	33.99	36.06	46.76	54.41	56.43	65.41	69.90	68.10	64.36	49.75	35.55	31.01	52.53	67.80	49.89	33.69	50.98
1843....	35.77	23.84	26.05	48.01	57.64	68.10	72.38	71.25	66.84	46.08	37.41	33.59	43.90	70.58	50.11	31.73	49.08
1844....	25.48	31.35	40.75	59.52	62.52	68.17	73.12	68.97	62.19	47.15	38.59	31.88	54.26	70.09	49.31	29.57	50.81
1845....	33.53	31.36	39.49	53.59	58.34	69.12	70.60	72.41	62.10	47.38	38.07	23.10	50.47	70.71	49.18	29.33	49.92
1846....	29.27	27.74	40.09	54.28	65.42	68.92	73.27	74.12	68.50	51.50	45.30	35.70	53.26	72.10	55.10	30.80	52.81
1847....	29.92	32.62	37.27	50.31	62.36	66.97	72.48	68.67	62.03	49.41	42.12	33.10	49.98	69.37	51.18	31.88	50.60
1848....	33.63	31.49	36.37	48.75	64.28	68.37	70.97	70.91	58.14	50.16	36.60	40.18	49.80	70.08	48.30	35.10	50.82
1849....	28.28	28.08	41.05	47.84	60.35	70.93	71.50	69.79	60.15	50.22	44.82	30.22	46.21	70.74	51.73	28.86	49.43
1850....	33.63	31.87	35.50	46.06	53.97	68.48	76.10	72.28	62.51	49.33	42.08	32.68	45.18	72.29	51.31	32.73	50.38
1851....	32.47	37.67	42.48	48.75	61.32	66.41	72.19	69.15	64.48	51.66	36.55	27.02	50.85	69.25	50.89	32.38	50.84
1852....	23.62	31.37	40.20	44.46	59.82	66.23	73.71	69.38	62.08	57.22	39.65	36.62	48.16	69.77	52.98	30.54	50.36
1853....	29.31	32.08	38.50	50.42	60.90	73.72	72.21	71.88	65.02	48.46	44.38	29.38	49.94	72.60	52.95	30.26	51.44
1854....	29.08	33.49	40.36	49.30	61.17	71.15	78.18	76.38	69.92	53.32	37.92	30.53	50.28	75.24	53.72	31.03	52.57
Mean } 22 y'rs }	29.25	31.16	39.02	49.96	60.92	69.22	72.98	71.21	63.58	50.91	39.80	31.35	49.97	71.47	51.43	30.59	50.86

## CARLISLE BARRACKS, PENNSYLVANIA.

*Latitude 40° 12', Longitude 77° 14'. Altitude 500 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1839....	.....	.....	.....	.....	.....	.....	77.17	72.76	67.08	56.30	34.90	29.33	.....	.....	52.76	.....	.....
1840....	20.44	35.64	42.50	52.52	60.36	67.69	72.88	71.64	58.60	50.66	38.99	26.82	51.79	70.74	49.41	27.63	49.89
1841....	29.15	25.52	33.62	46.31	59.53	71.48	70.64	70.76	64.86	45.51	39.33	30.60	46.49	70.96	49.90	25.42	48.94
1842....	31.43	33.37	45.24	51.29	54.32	67.23	72.17	68.83	62.60	48.56	34.13	29.09	50.28	69.41	48.43	31.28	49.85
1843....	33.74	23.90	26.88	50.80	60.15	68.85	72.70	72.05	67.90	49.80	37.50	31.65	45.94	71.20	51.73	29.76	49.66
1844....	25.07	31.26	41.00	59.06	65.88	70.09	77.01	73.10	66.65	54.36	41.61	32.93	55.31	73.40	54.21	29.75	53.17
1845....	35.80	32.86	43.56	54.11	62.42	75.95	80.35	78.91	71.50	57.16	46.80	28.35	53.36	78.40	58.49	32.34	55.65
1846....	34.58	32.48	39.90	51.42	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1848....	31.50	30.80	35.81	51.41	64.75	72.46	71.27	68.81	58.59	52.10	35.34	38.25	50.66	70.85	48.68	34.52	50.93
1849....	24.93	24.92	40.60	48.90	58.01	71.92	73.18	72.32	62.56	51.19	46.37	29.81	49.17	72.47	53.37	26.55	50.39
1850....	30.13	32.40	36.85	46.46	56.48	71.15	75.79	71.58	62.14	50.20	41.48	32.05	46.60	72.84	51.27	31.53	50.56
1851....	31.38	36.85	41.47	47.61	60.72	67.33	71.90	69.30	63.83	52.13	36.95	.....	49.93	69.81	50.97	.....	.....
1852....	23.00	30.19	37.09	44.25	61.73	68.31	74.16	68.62	61.31	55.63	38.55	36.30	47.69	70.36	51.83	29.83	49.93
1853....	28.94	32.21	38.62	48.18	60.54	73.00	73.78	72.61	65.72	.....	.....	.....	49.11	73.13	.....	.....	.....
1854....	.....	.....	.....	.....	.....	.....	.....	73.61	68.66	55.29	41.60	28.70	.....	.....	55.18	.....	.....
Mean } 13 y'rs }	29.24	33.95	38.78	50.10	60.41	70.45	74.08	71.92	64.43	52.22	39.50	31.16	49.76	72.15	52.05	30.45	51.10



## FORT MIFFLIN, PENNSYLVANIA.

*Latitude 39° 53', Longitude 75° 13'. Altitude 20 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1823....	31.95	26.61	39.11	55.77	63.84	75.22	82.19	78.81	73.27	58.27	42.46	35.11	52.91	78.74	58.00	31.22	55.92
1824....	35.13	32.73	38.27	48.55	63.09	75.24	80.96	75.18	73.44	56.12	46.33	39.22	49.97	77.13	58.63	35.69	55.35
1843....	39.01	27.78	30.45	50.36	59.22	70.43	73.70	74.82	69.16	51.28	40.56	34.42	46.68	72.98	53.67	33.74	51.77
1844....	28.28	32.03	42.54	54.51	65.79	69.98	74.53	72.55	65.82	52.41	42.59	33.55	54.28	72.35	53.51	31.29	52.86
1845....	36.43	33.56	44.79	52.98	60.84	71.76	76.58	75.41	66.67	53.95	44.57	28.59	52.93	74.58	55.06	32.86	53.86
1846....	32.22	28.75	41.75	52.46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1849....	29.67	28.38	42.24	49.90	57.74	72.56	73.35	73.86	66.54	55.98	51.86	33.76	49.95	73.26	57.89	30.60	52.92
1850....	35.25	37.72	40.06	47.50	57.82	71.46	77.18	73.35	68.05	56.06	.....	36.30	48.46	74.00	.....	36.42	.....
1851....	33.17	37.00	41.84	50.66	61.77	69.49	76.25	73.49	69.40	61.05	53.27	34.90	51.42	73.07	61.24	35.02	55.19
1852....	33.16	35.01	40.77	44.00	63.34	69.64	79.97	72.27	67.58	58.80	42.40	39.75	49.37	73.96	56.26	35.97	53.89
1853....	31.06	34.76	41.28	50.59	62.09	73.70	74.43	74.37	67.06	54.86	.....	.....	51.29	74.17	.....	.....	.....
Mean } 10 yrs }	33.21	32.21	40.30	50.65	61.55	71.95	76.91	74.41	68.70	55.81	45.50	35.07	50.83	74.42	56.67	33.50	53.85

## FORT DELAWARE, DELAWARE.

*Latitude 39° 35', Longitude 75° 34'. Altitude 10 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1825....	.....	36.57	43.09	53.04	65.14	74.31	80.47	75.35	68.05	61.47	46.47	35.42	53.76	76.71	58.66	.....	.....
1826....	35.15	37.09	39.50	45.77	69.46	76.56	77.72	76.03	76.59	57.68	50.64	38.35	51.58	76.77	61.64	36.86	56.71
1827....	29.92	40.44	47.28	58.70	62.38	70.64	77.05	*71.54	79.26	59.47	.....	43.41	56.12	76.08	.....	37.92	.....
1828....	42.38	46.40	49.02	50.89	67.18	79.11	79.29	79.48	68.65	55.37	47.60	42.01	55.70	79.29	57.21	43.60	58.95
1829....	31.56	26.92	37.07	52.82	65.17	71.80	73.98	74.98	64.36	55.51	42.61	40.10	51.69	73.59	54.16	32.86	53.07
1830....	31.94	28.90	41.76	54.17	63.33	70.19	79.42	78.51	68.62	58.42	45.62	36.67	53.09	76.04	57.55	32.84	54.88
1854....	32.38	34.56	43.18	50.98	64.50	.....	.....	.....	.....	.....	.....	.....	52.89	.....	.....	.....	.....
Mean } 6 yrs }	33.67	35.84	42.99	52.34	65.31	73.77	77.99	75.98	70.92	57.99	46.59	39.33	53.55	75.91	58.50	36.28	56.06

\* August, 1827, observed at Cape May.

## FORT McHENRY, MARYLAND.

*Latitude 39° 17', Longitude 76° 35'. Altitude 36 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1831....	28.66	30.78	47.33	56.49	64.34	74.75	75.51	75.88	67.07	59.78	43.72	25.36	56.05	75.38	56.86	28.27	54.14
1832 ...	31.81	37.46	44.50	52.66	62.76	71.75	76.52	75.69	71.60	59.84	46.78	38.97	53.31	74.65	59.41	36.08	55.86
1833....	37.06	37.40	40.79	56.64	70.12	72.71	77.71	74.12	69.27	54.69	44.26	38.49	55.85	74.85	56.07	37.65	56.10
1834....	29.71	44.49	47.15	55.27	61.07	72.00	80.41	77.26	66.78	52.97	44.63	36.52	54.50	76.56	54.80	36.91	55.69
1835....	31.82	29.09	41.01	49.03	63.97	71.18	75.53	72.46	61.81	58.39	48.43	33.31	51.34	73.06	56.21	31.41	53.00
1836....	33.77	26.06	32.80	51.52	63.43	66.77	74.76	69.97	68.52	48.21	41.61	41.61	49.25	70.50	52.78	33.81	51.58
1837....	28.77	34.08	40.83	49.08	62.26	69.92	74.72	73.78	64.49	56.33	46.66	36.28	50.72	72.81	55.83	33.04	53.10
1838....	37.34	26.79	42.59	48.35	59.29	74.46	80.55	77.38	67.58	51.32	40.68	31.08	50.08	77.46	53.19	31.74	53.12
1839....	32.41	34.66	43.30	56.41	66.25	70.00	77.10	72.94	67.10	60.10	40.22	34.27	55.32	73.35	55.81	33.78	54.56
1840....	24.20	38.68	45.26	54.25	61.51	71.16	73.77	74.47	63.49	55.72	43.69	29.88	53.67	72.80	54.30	30.92	52.92
1841....	30.45	31.81	40.36	47.43	55.72	69.63	76.42	74.07	70.64	49.28	42.07	35.06	47.84	73.37	54.00	32.44	51.91
1832....	36.42	38.14	47.97	54.19	59.63	68.98	75.39	73.42	68.08	54.43	38.93	32.68	53.93	72.60	53.81	35.75	54.02
1843....	38.39	28.13	30.14	50.28	60.97	72.61	75.73	76.36	71.15	54.36	41.96	35.18	47.13	74.90	55.82	33.90	52.94
1844....	29.22	32.10	41.93	55.88	66.46	69.34	77.36	74.10	66.62	52.88	41.08	33.25	54.76	73.60	53.53	31.52	53.35

FORT McHENRY, MARYLAND—Continued.

*Latitude 39° 17', Longitude 76° 35'. Altitude 36 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1845....	36.85	34.09	44.13	54.55	60.55	71.77	76.07	.....	.....	.....	.....	.....	53.08	.....	.....	.....	.....
1846....	32.29	29.64	42.02	52.98	64.81	68.09	74.30	74.16	69.98	54.32	47.31	34.79	53.27	71.85	57.20	32.24	53.64
1847....	30.71	32.52	38.00	55.74	64.19	69.99	77.62	75.27	68.33	55.79	49.21	37.94	52.64	74.29	57.78	33.72	54.61
1848....	37.51	36.17	40.73	56.91	67.86	74.91	75.26	76.24	65.23	57.61	42.23	43.91	55.17	75.47	55.02	39.29	56.21
1849....	31.89	30.94	41.41	52.05	61.19	75.17	76.17	75.47	67.92	57.07	53.57	37.10	52.56	75.60	59.52	33.31	55.25
1850....	38.18	39.78	42.75	50.59	61.20	74.67	78.55	73.96	67.88	58.23	51.36	40.37	51.51	74.73	59.16	39.44	56.46
1851....	37.30	39.54	47.05	54.73	64.84	71.39	78.33	73.64	69.37	58.86	46.63	32.67	55.54	74.45	58.28	35.50	56.19
1852....	28.01	35.86	42.95	47.95	63.18	70.12	74.85	76.00	65.86	58.26	42.97	40.48	51.36	73.66	55.69	34.78	53.87
1853 ...	32.27	36.74	42.75	53.19	64.33	74.53	76.01	75.15	69.83	54.14	48.66	36.62	53.12	75.23	57.54	35.21	55.35
1854....	33.61	36.47	44.40	49.00	64.29	72.00	78.32	75.45	71.29	58.11	50.55	33.76	52.56	75.26	59.98	34.61	55.60
Mean { 24 yrs. }	32.86	34.23	42.29	52.71	63.10	71.58	76.71	74.66	67.82	55.68	45.10	35.63	52.70	74.32	56.20	34.24	54.36

FORT SEVERN, MARYLAND.

*Latitude 38° 58', Longitude 76° 27'. Altitude 20 feet.*

1822....	29.28	35.13	46.26	55.05	67.09	73.16	79.68	77.23	72.36	61.55	53.82	38.51	56.13	76.69	62.58	34.31	57.43
1831....	27.86	27.82	45.19	54.43	64.32	74.91	77.54	75.66	68.37	59.15	44.64	25.98	54.64	76.05	57.39	27.22	54.82
1832....	32.70	37.78	43.35	51.84	61.63	71.97	77.01	75.44	68.82	58.38	48.59	43.24	52.27	74.81	58.69	37.91	55.90
1833....	36.68	37.36	40.84	58.14	66.74	71.23	77.95	75.20	70.95	57.09	45.83	38.08	55.24	74.79	57.96	37.37	56.34
1834....	30.00	40.79	45.05	49.70	64.14	72.95	79.79	78.10	61.78	58.08	46.70	36.83	52.96	76.95	52.19	35.87	54.49
1843....	.....	.....	32.46	51.46	60.40	72.13	75.66	75.11	70.40	53.16	41.95	36.80	48.11	74.30	55.17	.....	.....
1844....	30.35	32.85	43.03	55.20	69.00	72.04	77.99	75.45	69.09	55.91	46.34	37.46	56.08	75.16	57.11	33.55	55.47
1845....	39.31	36.51	46.59	55.60	62.59	73.35	77.72	.....	.....	.....	.....	.....	54.90	.....	.....	.....	.....
Mean { 8 yrs. }	32.31	35.46	42.85	54.05	64.48	72.72	77.17	76.03	68.82	57.62	46.84	36.70	53.79	75.31	57.76	34.82	55.42

WASHINGTON CITY.\*

*Latitude 38° 53' 39", Longitude 77° 2' 48". (National Observatory.) Altitude 50 to 90 feet.*

1823...	41.37	35.15	47.41	59.69	66.49	73.27	78.21	76.67	68.42	53.04	37.75	37.23	57.86	76.05	53.27	36.92	56.28
1824....	38.51	34.66	41.46	55.35	64.69	73.60	79.13	74.98	63.63	57.27	43.88	40.28	53.83	75.90	56.59	36.82	56.04
1825....	35.41	39.14	48.87	58.38	64.98	76.38	79.27	75.77	67.51	60.16	44.63	36.13	56.74	77.13	57.40	33.56	58.24
1826....	35.66	41.33	49.00	53.36	73.42	76.51	77.48	76.25	72.34	58.68	45.84	36.31	58.59	76.75	58.95	37.77	58.02
1827....	30.20	42.63	47.41	59.97	66.22	74.35	79.93	78.42	70.15	58.41	44.87	41.59	57.87	77.57	57.81	38.14	57.85
1828....	41.13	47.26	47.52	50.44	66.96	79.29	78.11	79.09	67.41	54.79	47.33	41.74	51.97	78.83	56.51	43.38	58.42
1829....	32.74	28.62	39.63	54.36	65.53	73.61	74.80	73.91	64.29	55.79	42.69	44.28	53.17	74.11	54.22	36.21	54.18
1830....	33.84	33.70	46.36	56.32	65.16	73.54	81.14	77.95	69.27	58.66	52.47	37.33	55.95	77.54	60.13	34.96	57.11
1831....	26.83	29.32	46.82	55.06	63.32	73.91	74.96	74.78	67.37	56.03	42.13	25.37	55.07	74.55	55.18	27.17	52.99
1832....	31.98	37.13	44.91	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1833....	35.59	36.57	41.63	58.20	70.02	71.34	77.59	74.50	68.88	53.87	43.30	37.53	56.62	71.48	55.02	36.56	55.67
1834....	29.82	43.15	47.35	55.82	62.84	72.37	80.51	77.22	66.45	53.31	43.80	36.54	55.34	76.67	54.52	36.50	57.88
1835....	30.15	29.01	41.37	53.45	65.46	75.14	78.03	75.97	62.44	59.77	49.32	33.57	50.09	76.38	57.18	34.91	53.64
Mean { 12 yrs. }	34.09	35.74	45.36	55.70	66.26	74.44	78.25	76.29	67.76	53.70	44.83	37.62	53.11	76.33	56.43	36.05	56.14

\* Observations by Rev. Robert Lamb, to July, 1827, and by Assistant Surgeon J. A. Breckon, subsequently. The first day was in the first case near the center of the city, and in the last near the War Department building.

FORT WASHINGTON, MARYLAND.

*Latitude 38° 43', Longitude 77° 06'. Altitude 60 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1824....	42.67	38.40	45.34	56.53	65.96	75.06	79.63	76.11	68.32	59.25	47.50	43.00	55.94	76.93	58.36	41.36	58.15
1825....	37.44	40.47	50.12	58.90	66.67	78.23	81.46	78.72	69.79	63.56	47.34	39.13	58.63	79.47	60.23	39.01	59.33
1826....	38.41	43.53	51.20	54.70	74.00	77.83	78.61	77.79	73.32	61.66	49.83	40.24	59.97	78.08	61.60	40.73	62.34
1827....	31.19	46.12	51.40	62.72	66.22	74.35	.....	.....	.....	60.19	46.85	41.33	60.11	.....	.....	39.55	.....
1828....	42.64	48.00	49.00	52.09	69.37	.....	.....	.....	.....	59.98	49.65	33.34	56.89	.....	.....	41.33	.....
1829....	33.70	28.33	41.05	57.86	70.28	76.22	77.44	77.41	67.90	58.21	45.08	46.26	56.43	77.02	57.07	36.09	56.65
1830....	35.21	36.05	49.38	60.69	69.40	77.28	83.60	79.08	70.75	62.14	53.94	38.43	59.82	79.99	62.28	36.56	59.66
1831....	.....	31.33	50.65	59.43	69.25	79.48	79.45	77.72	71.23	61.74	45.97	26.16	59.78	78.88	62.98	.....	.....
1832....	.....	.....	.....	56.68	67.10	76.54	81.11	77.26	69.88	59.10	50.86	39.89	.....	78.30	59.61	.....	.....
1833....	38.57	38.71	43.53	62.00	73.41	76.24	82.57	78.42	73.59	56.47	47.07	38.24	59.64	79.07	59.04	38.50	58.40
1834....	31.29	45.59	44.45	55.75	64.88	79.20	83.03	79.77	71.41	56.52	43.17	37.94	55.02	76.73	57.03	38.24	57.25
1835....	31.81	28.89	42.98	.....	.....	.....	78.23	73.20	62.94	59.73	49.83	34.56	.....	.....	57.17	31.75	.....
1851....	.....	.....	.....	.....	66.04	72.20	78.48	74.61	68.08	58.02	43.09	31.17	.....	75.09	56.40	.....	.....
1852....	29.31	37.09	45.31	50.14	67.30	73.22	78.63	72.43	67.38	60.64	43.76	42.14	54.25	74.76	57.26	36.18	55.61
1853....	34.00	39.18	44.71	55.29	65.85	76.64	77.57	78.01	69.88	.....	.....	.....	55.28	77.41	.....	.....	.....
Mean of 15 yrs.	35.50	38.59	46.86	57.14	68.28	76.35	79.99	76.96	69.57	59.80	47.42	37.99	57.43	77.77	58.93	37.36	57.87

BELLONA ARSENAL, RICHMOND, VIRGINIA.

*Latitude 37° 20', Longitude 77° 25'. Altitude 120 feet.*

1824....	41.44	34.09	42.10	50.26	57.48	79.03	76.47	76.76	.....	63.00	48.74	41.64	49.95	77.42	.....	39.06	.....
1825....	35.54	40.21	56.51	.....	.....	.....	80.28	79.85	72.52	.....	48.34	38.09	.....	.....	.....	37.95	.....
1826....	40.37	46.97	53.83	.....	.....	.....	.....	.....	.....	61.06	49.74	40.34	.....	.....	.....	42.56	.....
1827....	.....	.....	.....	63.45	66.18	73.58	79.89	79.53	70.32	59.04	54.33	49.49	.....	77.67	61.23	.....	.....
1828....	43.25	52.45	50.79	55.73	73.23	81.09	79.60	80.29	71.95	59.66	52.88	44.93	59.92	80.33	61.50	46.88	62.16
1829....	35.66	40.65	45.10	58.83	66.96	74.92	76.92	75.80	67.42	58.75	46.14	46.68	56.96	75.88	57.44	41.00	57.82
1830....	39.21	39.50	51.55	59.50	67.18	76.16	81.38	78.72	69.10	59.72	53.66	42.44	59.08	78.75	60.83	40.38	59.76
1831....	31.59	34.97	54.10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1832....	38.08	45.42	50.27	57.04	70.67	74.57	78.19	77.70	70.14	59.32	50.87	43.82	59.33	76.82	60.11	42.44	59.67
1833....	43.41	43.47	48.50	63.74	72.83	76.72	80.80	74.58	72.53	.....	.....	.....	61.69	77.77	.....	.....	.....
Mean of 8 yrs.	38.73	41.97	50.30	58.36	63.50	76.58	79.19	77.90	70.57	60.08	50.59	43.43	57.39	77.89	60.41	41.38	59.27

FORT MONROE, VIRGINIA.

*Latitude 37° 00', Longitude 76° 18'. Altitude 8 feet.*

1825....	46.17	47.96	55.89	59.80	69.85	75.30	75.97	77.88	72.75	67.23	55.52	44.05	61.85	76.38	65.17	46.06	62.36
1826....	43.55	48.23	54.87	56.63	71.57	78.02	79.98	79.33	76.51	63.11	50.23	42.89	61.02	79.11	63.28	44.89	62.07
1827....	36.58	45.84	51.08	61.85	63.47	71.39	70.18	80.21	71.52	62.79	49.71	50.86	58.80	76.93	61.34	44.43	60.37
1828....	49.71	53.51	52.77	58.53	70.27	79.09	79.58	80.51	71.31	63.29	56.98	47.57	60.52	79.73	63.86	50.26	63.59
1829....	41.47	36.07	43.66	56.85	66.59	74.40	78.03	78.90	71.00	64.59	51.50	50.77	55.70	77.11	62.36	42.77	59.48
1830....	42.84	40.62	50.95	51.37	67.25	75.97	81.46	78.55	73.23	65.11	59.05	47.00	56.52	78.66	65.80	43.49	61.12
1831....	36.00	37.84	50.26	57.46	64.11	76.54	79.04	78.19	74.06	61.27	48.30	28.97	57.28	77.92	61.21	34.27	57.67
1832....	33.65	40.32	42.92	49.65	59.54	66.74	72.36	72.60	67.66	57.75	48.85	42.13	50.70	70.57	58.09	38.70	54.51
1833....	39.39	38.70	41.06	53.67	66.37	69.56	75.85	76.03	73.23	63.63	50.31	43.28	53.70	73.81	62.39	40.46	57.59



## FORT MONROE, VIRGINIA—Continued.

*Latitude 37° 00', Longitude 76° 18'. Altitude 8 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1834....	35.96	46.46	49.95	57.19	64.85	75.27	81.13	79.20	74.26	65.07	53.22	45.98	57.33	78.53	64.18	42.80	58.21
1835....	42.53	34.28	45.76	56.86	65.32	71.66	77.46	76.35	69.26	64.75	56.87	42.12	55.98	75.16	63.63	39.64	61.10
1836....	38.58	31.95	41.75	55.43	67.49	71.23	76.36	75.52	74.04	57.32	45.22	37.90	54.89	74.37	58.85	36.14	54.56
1837....	32.93	42.53	45.93	53.83	64.40	73.60	80.11	77.42	68.50	64.64	54.91	46.07	54.72	77.04	62.68	40.51	58.74
1838....	46.01	33.51	48.25	53.92	63.70	74.55	82.83	81.14	72.30	60.45	46.72	38.55	55.29	79.51	59.63	39.36	58.50
1839....	39.72	43.13	46.94	56.62	69.18	73.14	80.04	76.11	69.85	63.84	48.03	40.15	57.58	76.45	60.57	37.67	58.07
1840....	34.26	47.72	53.15	61.38	67.82	74.83	78.29	79.00	69.49	63.37	50.68	41.48	60.78	77.37	61.18	41.14	60.12
1841....	41.50	39.11	47.50	54.32	63.45	77.53	78.54	76.94	74.60	56.96	51.04	45.42	55.09	77.67	60.87	42.01	58.66
1842....	45.09	47.03	57.18	62.78	66.99	74.18	77.42	75.72	74.38	62.39	44.27	38.40	62.32	75.77	60.35	43.51	60.49
1843....	44.12	37.12	37.09	55.30	64.18	75.29	78.19	77.18	75.28	58.25	48.80	41.24	52.19	76.89	60.78	40.83	57.67
1844....	38.03	37.92	48.73	59.32	72.24	74.91	78.67	74.13	71.62	60.56	52.46	41.84	60.10	75.90	61.55	38.28	58.96
1845....	44.79	42.74	51.01	58.59	65.94	76.30	79.02	77.95	72.00	61.07	51.70	34.77	58.51	77.76	61.59	40.77	59.66
1846....	40.96	38.87	48.91	57.29	70.00	73.95	78.86	79.74	74.20	61.56	54.46	46.24	58.73	77.52	63.41	42.00	60.41
1847....	42.19	42.65	45.01	54.91	62.21	72.24	76.16	74.35	69.98	60.50	53.02	43.88	54.05	74.25	61.17	43.24	58.18
1848....	41.45	39.79	47.49	55.06	67.77	75.48	75.48	75.89	69.28	59.11	46.22	51.79	56.77	75.62	58.20	44.34	58.73
1849....	37.50	36.56	46.40	54.30	61.65	75.56	75.45	76.01	70.70	60.18	54.94	43.35	54.12	75.67	61.94	39.14	57.72
1850....	43.34	43.01	46.57	51.07	62.99	73.09	78.46	76.85	71.45	60.65	52.67	45.75	53.54	76.13	61.59	44.04	58.82
1851....	42.44	46.36	49.32	54.38	65.49	72.54	79.00	75.04	69.66	61.36	48.46	40.90	56.39	75.52	59.82	43.23	59.57
1852....	35.19	42.62	48.87	53.44	65.85	72.74	76.23	74.12	70.20	63.39	49.94	47.87	56.05	74.36	61.18	41.89	58.38
1853....	38.84	44.00	48.62	56.13	64.94	74.49	77.51	76.96	71.85	59.20	55.46	43.09	56.56	76.33	62.17	41.98	59.26
1854....	41.47	43.82	50.82	57.16	68.74	77.20	80.21	79.55	76.60	64.55	52.85	40.75	58.91	78.99	64.67	42.01	61.14
Mean / 30 yrs.	40.54	41.67	48.29	56.17	66.14	74.22	78.23	77.25	72.03	61.60	51.41	43.13	56.87	76.57	61.68	41.45	59.14

## FORT MACON, NORTH CAROLINA.

*Latitude 34° 41', Longitude 76° 40'. Altitude 20 feet.*

1833....	.....	.....	.....	.....	.....	.....	.....	.....	.....	65.20	54.29	45.09	.....	.....	.....	.....	.....
1834....	41.16	51.99	55.37	63.95	70.94	82.57	81.63	79.72	76.53	66.34	57.42	51.50	63.42	81.31	66.76	48.22	64.93
1835....	44.55	41.09	50.78	58.71	66.70	77.66	78.66	78.10	71.06	65.97	61.10	46.03	58.40	78.14	66.04	43.89	61.62
1836....	46.00	39.33	46.34	57.42	67.69	74.04	.....	.....	.....	.....	.....	.....	57.15	.....	.....	.....	.....
1843....	51.07	44.50	43.05	57.87	67.50	75.95	80.05	80.14	79.32	62.60	53.22	47.33	56.14	78.71	65.05	47.63	61.88
1844....	43.06	43.53	51.91	62.00	71.60	74.12	78.85	77.51	71.66	61.97	.....	.....	61.84	76.83	.....	.....	.....
Mean / 5 yrs.	45.17	44.09	49.49	60.00	68.89	76.87	79.80	78.87	74.64	64.42	56.51	48.00	59.46	78.51	65.19	45.75	62.23

## FORT JOHNSTON, NORTH CAROLINA.

*Latitude 34° 00', Longitude 78° 05'. Altitude 20 feet.*

1822....	50.32	52.97	60.43	66.73	74.68	78.74	81.39	80.59	76.12	70.79	66.69	54.95	67.28	80.24	71.20	52.75	67.87
1823....	52.14	46.55	58.71	67.29	74.19	76.92	80.83	79.91	75.89	65.91	55.56	54.30	66.73	79.22	65.79	51.00	65.68
1824....	55.34	50.69	58.42	63.97	71.90	77.97	82.93	80.50	75.19	68.87	60.40	57.34	64.76	80.47	68.15	54.46	66.96
1825....	51.82	54.34	61.96	62.11	73.38	79.98	81.07	80.19	75.00	68.85	57.03	58.44	68.82	80.61	66.96	51.54	66.18
1826....	47.47	56.38	63.08	66.29	74.34	81.28	81.61	80.76	79.39	71.14	60.98	54.35	67.90	81.34	70.50	54.11	68.07
1827....	45.41	58.77	59.63	.....	.....	.....	.....	.....	.....	65.70	57.46	59.24	.....	.....	.....	54.47	.....
1828....	52.13	61.59	62.00	63.64	74.17	80.47	79.66	81.33	74.17	67.36	61.48	50.95	66.69	80.49	67.57	59.66	68.53

FORT JOHNSTON, NORTH CAROLINA. Continued.

*Latitude 34° 00', Longitude 78° 05'. Altitude 20 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1829....	50.81	46.63	52.40	62.30	70.90	79.19	80.43	80.83	75.22	.....	.....	.....	61.87	80.15	.....	.....	.....
1830....	50.35	50.39	59.18	64.16	71.88	77.46	.....	.....	.....	66.62	62.40	53.58	65.07	.....	.....	51.44	.....
1831....	43.03	44.27	55.72	64.15	70.80	79.67	80.65	80.93	78.19	68.05	56.83	41.58	63.56	80.42	67.69	42.96	63.66
1832....	45.58	55.91	54.47	64.28	72.84	77.30	80.22	80.08	75.83	68.43	62.15	57.70	63.86	79.20	68.80	53.03	66.22
1833....	50.43	51.09	54.26	63.88	76.12	80.83	82.36	77.29	76.92	64.23	53.73	47.39	64.75	80.16	64.97	49.70	64.87
1834....	42.98	53.63	57.23	61.94	69.65	80.09	83.14	79.18	75.97	67.07	55.39	49.54	62.94	80.80	66.14	48.72	64.65
1835....	45.42	39.92	50.68	63.38	72.85	79.96	80.25	79.63	71.34	65.58	61.19	48.36	62.30	79.71	66.04	44.57	63.15
1836....	46.87	44.69	48.51	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1843....	52.00	47.00	46.50	61.50	70.50	76.50	82.50	82.00	80.00	64.00	58.00	49.12	59.50	80.33	67.33	49.37	64.13
1844....	43.57	45.69	54.34	64.64	76.90	77.77	82.46	79.18	75.33	63.61	59.77	48.50	65.29	79.80	66.24	45.92	64.31
1845....	50.94	48.99	56.55	66.44	70.74	79.30	82.76	.....	.....	.....	.....	.....	64.58	.....	.....	.....	.....
Mean of 1843-45	49.03	50.53	56.34	64.17	72.86	78.92	81.48	80.17	76.04	67.07	59.26	52.24	64.46	80.19	67.46	50.60	65.68

AUGUSTA ARSENAL, GEORGIA.

*Latitude 33° 28', Longitude 81° 53'. Altitude 600? feet.*

1826....	48.55	56.21	65.87	68.09	71.46	79.26	83.30	81.22	78.03	68.24	56.26	47.65	70.47	81.26	67.51	50.81	67.51
1827....	44.57	61.26	59.30	67.93	70.92	76.98	82.88	81.44	75.10	66.66	57.63	57.16	66.05	80.43	66.46	54.33	66.82
1828....	54.41	57.66	59.47	64.28	76.57	83.37	81.66	81.61	72.13	71.40	56.74	54.44	66.77	82.21	66.76	55.50	67.81
1829....	46.97	40.27	49.92	59.40	69.18	78.36	78.58	78.30	72.21	61.77	50.45	54.18	59.50	78.41	61.48	47.14	61.63
1830....	48.61	50.39	58.30	69.19	72.41	81.45	84.40	83.14	73.85	61.12	60.71	49.04	66.63	83.00	65.26	49.35	66.06
1831....	40.98	45.57	58.72	65.69	69.54	77.24	80.41	77.74	74.06	65.12	53.90	37.23	61.65	78.50	64.36	41.26	62.19
1832....	45.52	55.81	54.92	64.25	72.94	77.57	81.72	79.63	73.58	64.15	56.28	49.41	64.04	79.64	64.67	50.21	64.64
1833....	51.05	57.04	57.69	65.21	77.07	84.39	84.27	80.41	76.80	60.61	51.31	44.72	66.66	83.02	62.91	51.94	66.13
1834....	44.24	62.03	50.52	63.70	72.03	82.86	85.25	83.24	74.65	63.85	52.97	49.23	62.18	83.78	63.82	51.83	65.40
1835....	40.92	*39.60	50.77	61.91	72.84	79.66	79.82	78.85	68.21	*63.38	60.03	47.15	61.84	79.44	63.87	44.22	62.36
1836....	45.05	44.09	50.34	64.59	72.62	75.98	79.43	78.02	75.70	.....	.....	.....	62.52	77.81	.....	.....	.....
1837....	39.24	49.21	53.77	58.61	70.84	76.43	86.37?	81.71	72.89	.....	.....	.....	61.07	81.50	.....	.....	.....
1838....	.....	.....	.....	64.65	66.98	79.22	84.93	83.01	74.60	56.79	47.66	40.35	.....	82.39	59.68	.....	.....
1839....	44.65	46.16	55.10	65.90	70.58	79.32	79.71	78.90	72.47	66.09	47.91	38.67	63.86	79.31	62.16	43.16	62.05
1840....	43.43	54.17	58.21	64.80	68.00	75.41	75.99	75.25	66.34	63.94	50.47	43.81	63.67	75.55	60.25	47.15	61.65
1841†...	47.00	46.00	53.94	62.88	70.30	78.40	80.47	76.37	71.55	57.72	52.62	44.85	62.37	78.41	60.63	45.91	61.83
1842....	48.74	51.31	64.26	66.95	71.58	76.39	77.45	74.93	74.26	60.42	46.98	44.47	67.60	76.26	60.55	48.17	63.14
1843....	50.90	46.69	43.87	64.76	71.16	78.23	82.96	79.20	80.73	64.75	58.66	52.27	59.93	80.13	68.05	49.95	64.51
1844....	44.78	51.20	56.09	69.15	77.43	77.04	81.49	79.42	74.43	63.94	57.14	48.42	67.56	79.32	65.17	48.13	65.04
1845....	51.40	52.92	57.19	70.55	79.96	83.47	87.48	80.94	74.85	62.86	50.71	38.76	66.90	83.96	62.81	47.69	65.34
1846....	45.83	46.52	57.64	65.56	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean of 1843-46	46.73	50.70	55.80	65.15	70.17	79.05	81.92	79.66	72.82	63.49	53.80	46.77	64.37	80.21	63.37	48.07	64.01

\* February 8, 1835, thermometer—4° at 5 a. m.  
† First nine months of 1841 computed from observations at sunrise and 2 p. m.; remainder, 7, 2, and 9.  
NOTE.—The very low mean temperature of December, 1831, will be observed in the series at each post.

## FORT MOUTRIE, SOUTH CAROLINA.

*Latitude 32° 45', Longitude 79° 51'. Altitude 25 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1823....	48.56	43.06	57.09	65.36	75.12	75.97	81.17	79.83	76.43	66.26	56.80	50.96	67.86	78.99	66.50	47.53	64.72
1824....	52.90	49.43	60.92	64.57	74.72	79.76	82.81	81.10	75.95	68.39	58.33	54.66	66.74	80.89	67.56	52.23	64.88
1825....	59.29	52.82	61.39	62.62	72.88	79.35	82.09	83.57	77.38	70.87	.....	.....	65.63	81.67	.....	.....	.....
1826....	.....	.....	.....	69.32	73.89	81.09	81.99	81.59	81.02	72.04	62.78	54.13	.....	81.56	71.95	.....	.....
1827....	44.93	59.93	62.45	69.11	73.67	77.25	83.33	80.76	76.73	.....	.....	.....	68.41	80.45	.....	.....	.....
1828*....	61.48	64.73	64.03	65.09	77.29	85.25	81.65	82.72	78.19	68.65	62.92	59.66	68.80	83.88	69.92	61.96	71.14
1829....	51.37	46.41	53.59	63.73	66.17	82.89	84.09	81.29	77.80	.....	.....	.....	61.16	81.12	.....	.....	.....
1830....	55.79	54.48	63.24	67.92	74.87	79.45	83.21	82.45	81.49	74.25	68.77	55.55	68.48	81.70	74.84	55.61	70.16
1831....	45.64	48.46	59.86	68.64	71.84	79.58	80.37	81.36	78.29	71.70	63.30	41.55	65.78	80.44	71.07	48.22	65.85
1832....	48.69	57.35	57.96	64.12	72.95	76.93	79.90	79.96	76.05	67.59	59.22	54.37	65.01	78.93	67.62	53.47	66.26
1833....	53.24	55.32	57.14	64.35	74.14	77.80	81.36	79.39	77.42	66.16	56.21	50.32	65.21	79.52	66.60	52.96	66.07
1834....	49.25	57.86	58.25	63.78	71.28	80.69	81.36	79.74	76.46	68.63	59.38	53.11	64.44	80.93	68.16	53.42	66.74
1835....	46.84	40.14	51.69	61.88	73.73	79.75	79.87	80.04	72.94	67.49	64.51	51.48	62.43	79.89	68.31	46.15	64.19
1840 ...	47.94	57.86	61.36	67.18	73.40	77.44	79.29	79.80	73.03	67.35	57.53	49.80	67.31	78.84	65.97	51.87	66.00
1841....	52.80	48.92	56.33	63.70	69.51	77.00	82.79	81.00	76.68	63.22	61.32	50.20	63.18	80.26	67.07	50.64	63.16
1842....	53.23	53.43	63.35	66.78	71.81	77.03	78.02	75.71	76.18	66.28	53.54	49.33	67.31	76.92	65.34	52.00	65.39
1843....	53.67	48.73	48.82	64.68	71.61	78.06	81.47	80.43	80.85	67.31	59.62	53.39	61.70	80.00	69.26	51.93	65.72
1844....	50.08	51.71	58.12	66.95	75.98	79.85	83.29	81.53	75.15	66.60	61.92	52.76	67.02	81.56	67.89	51.52	67.00
1845....	54.78	53.11	59.29	68.87	72.43	80.67	82.84	80.52	73.17	67.31	57.55	44.61	66.83	81.34	66.01	50.83	66.25
1846....	50.65	51.64	58.63	65.95	74.26	79.33	80.65	82.77	78.95	.....	61.46	53.41	66.31	80.92	.....	51.92	.....
1847....	52.71	53.82	54.42	66.62	69.32	80.61	81.07	80.97	76.55	66.66	60.51	53.80	63.45	80.68	67.90	53.44	66.37
1848....	50.02	50.17	59.52	66.05	.....	79.51	81.75	82.56	77.07	64.28	52.05	61.75	.....	81.34	64.47	50.96	.....
1849....	49.47	49.00	58.69	64.73	72.65	81.31	78.89	81.25	75.29	67.94	60.87	54.24	65.36	80.48	68.03	50.90	66.19
1850....	54.89	50.68	56.21	62.53	71.76	76.84	83.76	83.31	77.81	66.28	59.84	55.58	63.50	81.30	67.98	53.72	66.37
1851....	51.09	56.82	60.87	66.00	73.45	78.95	82.84	82.17	74.32	67.61	56.68	48.47	65.77	81.32	66.20	52.13	66.61
1852 ....	43.16	52.96	60.20	62.87	73.80	76.61	81.40	79.79	75.76	70.54	58.48	56.27	65.62	79.36	68.26	50.79	65.98
1853....	45.23	53.20	58.22	66.63	76.40	79.39	82.83	80.85	77.06	65.70	60.42	54.19	66.42	81.02	67.76	50.87	66.52
1854....	50.83	53.09	62.72	62.76	73.35	78.55	82.06	82.37	78.93	67.42	56.29	47.97	65.28	81.00	67.71	50.63	70.14
Mean of 29 yrs.	50.73	52.41	58.68	65.44	73.42	79.01	81.72	80.94	76.89	67.88	59.56	52.51	65.85	80.59	68.11	51.88	66.61

\* Assistant Surgeon Stevenson reports the mildness of the winter of 1828 as very remarkable. The only frost observed was on the 17th of March.

## OGLETHORPE BARRACKS, GEORGIA.

*Latitude 32° 05', Longitude 81° 07'. Altitude 40 feet.*

1832....	49.93	57.87	59.18	66.87	74.88	77.11	80.11	79.10	77.02	.....	.....	.....	70.31	78.77	.....	.....	.....
1833....	.....	.....	.....	.....	77.90	81.68	81.42	80.30	77.51	69.76	56.26	56.99	.....	81.13	67.84	.....	.....
1834....	53.26	63.87	62.76	68.15	74.81	83.70	83.06	81.85	77.51	70.27	63.06	58.29	68.57	82.87	70.28	58.47	70.95
1835....	52.68	49.71	59.64	63.77	76.66	78.81	78.98	79.99	72.99	66.10	63.36	50.82	66.69	79.26	67.48	51.07	66.12
1843....	57.20	53.17	49.90	66.90	73.47	78.96	82.20	81.13	81.83	67.35	59.90	53.48	63.42	80.56	69.69	54.62	67.12
1844....	49.00	52.93	57.30	68.53	78.92	79.89	81.74	79.83	74.42	64.07	60.00	49.18	68.25	80.48	66.16	50.37	66.31
1845....	52.52	53.62	59.30	72.02	73.67	81.40	83.14	80.87	77.12	66.70	56.51	45.01	68.40	81.80	66.78	50.28	66.84
1846....	52.39	53.71	61.24	64.07	75.44	78.41	79.71	81.05	77.50	.....	.....	.....	66.92	79.72	.....	.....	.....
1850....	.....	55.55	59.57	66.87	73.38	78.59	82.81	83.15	77.25	65.58	58.30	55.04	66.61	81.52	67.04	.....	.....
Mean of 9 yrs.	54.44	55.05	58.64	67.15	75.46	79.84	81.46	80.81	77.02	67.12	59.67	52.69	67.08	80.70	67.94	54.06	67.44



## CONSOLIDATED TABLES AND SUMMARIES.

## FORT MARION, ST. AUGUSTINE, FLORIDA.

*Latitude 29° 48', Longitude 81° 35'. Altitude 25 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1824....	.....	.....	.....	.....	.....	.....	.....	.....	.....	76.01	67.18	62.35	.....	.....	.....	.....	.....
1825....	61.10	60.79	70.14	67.57	76.71	81.23	83.03	83.94	80.76	76.89	67.82	56.60	71.47	82.73	75.16	59.50	72.21
1826....	56.69	64.98	70.63	74.19	78.26	82.27	81.17	82.62	81.97	75.50	61.78	.....	71.36	83.02	73.28	.....	.....
1827....	.....	.....	.....	74.35	76.69	80.20	84.35	82.43	79.62	72.75	63.58	65.59	.....	82.33	71.98	.....	.....
1828....	67.77	71.61	64.21	68.95	77.32	81.43	81.64	82.00	79.66	72.03	66.33	66.90	70.16	81.69	72.67	68.76	73.32
1829....	57.28	56.45	58.18	67.19	73.61	80.84	81.32	80.55	79.61	.....	.....	.....	66.33	80.90	.....	.....	.....
1830....	57.57	62.50	65.21	69.53	75.28	80.70	82.40	82.10	78.27	71.90	68.37	60.63	70.02	81.73	72.85	60.23	71.21
1831....	52.13	55.36	64.40	68.92	73.37	79.08	80.25	81.23	78.82	72.98	65.76	52.46	68.90	80.19	72.52	53.32	68.73
1832....	54.77	63.71	63.90	71.23	76.53	77.81	80.76	80.35	78.73	73.58	64.74	61.09	70.55	79.64	72.35	59.86	70.60
1833....	59.38	62.86	61.92	69.38	76.39	80.69	82.43	80.69	79.80	72.36	63.00	57.96	69.23	81.27	71.72	60.07	70.57
1834....	55.08	64.43	66.06	68.35	75.42	82.36	81.69	78.67	78.72	.....	.....	.....	69.94	80.91	.....	.....	.....
1836....	.....	.....	.....	.....	.....	.....	80.31	82.38	78.10	68.46	57.47	53.42	.....	.....	68.01	.....	.....
1837....	51.65	55.33	59.01	65.53	73.19	78.68	79.82	81.45	76.86	70.21	62.44	58.28	65.91	79.98	69.84	55.42	67.79
1838....	56.86	52.36	58.78	65.06	68.28	74.72	77.56	76.71	74.90	74.27	63.38	56.77	64.01	76.33	70.85	55.33	66.63
1839....	55.01	61.33	62.62	62.67	69.83	78.97	78.45	79.08	77.96	71.45	58.01	49.57	64.71	78.83	69.14	55.30	66.99
1840....	.....	.....	.....	.....	.....	.....	.....	.....	.....	73.30	56.03	49.39	.....	.....	.....	.....	.....
1841....	56.86	51.22	59.22	63.89	66.14	75.19	80.37	79.16	78.22	69.16	61.27	58.77	63.08	78.24	69.55	55.62	66.63
1842....	59.89	60.62	70.07	71.96	64.51	77.52	75.76	76.38	78.11	69.79	62.90	55.36	68.85	76.55	70.27	58.62	68.82
1843....	58.50	58.09	55.12	67.50	71.56	77.05	80.01	78.58	79.60	70.77	67.06	59.09	64.73	78.55	72.48	58.56	68.77
1844....	57.02	57.21	61.82	69.51	74.15	77.72	80.96	79.33	76.93	70.92	67.33	56.03	68.49	79.34	71.73	56.75	69.10
1845....	59.32	59.18	63.68	71.60	72.95	79.89	82.82	.....	77.78	72.87	61.92	50.25	69.41	.....	70.85	56.25	.....
1846....	57.50	56.75	64.12	69.05	75.07	77.82	.....	.....	.....	.....	.....	.....	69.41	.....	.....	.....	.....
1849....	.....	.....	.....	.....	.....	79.14	80.20	83.14	.....	.....	.....	.....	.....	80.82	.....	.....	.....
1851....	.....	63.70	64.32	69.32	74.86	79.14	80.55	80.54	77.48	73.35	65.18	57.45	69.50	80.07	72.00	.....	.....
1852....	49.26	60.31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean of 6 years	57.03	59.94	63.34	68.78	73.50	79.64	80.90	80.56	78.60	72.42	63.58	57.26	68.54	80.37	71.53	58.08	69.63

## FORT SHANNON, PILATKA, EAST FLORIDA.

*Latitude 29° 34', Longitude 81° 48'. Altitude 25 feet.*

1838*...	63.53	53.44	62.66	.....	.....	.....	82.54	82.55	78.74	66.98	60.60	52.91	.....	.....	68.77	56.63	.....
1839....	53.31	56.07	60.11	65.83	75.07	81.41	80.25	79.71	77.07	72.23	60.74	48.08	67.00	80.46	70.01	52.49	67.49
1840....	55.04	64.40	70.58	75.80	78.02	81.90	81.97	82.25	78.91	75.63	60.75	57.31	74.80	82.04	71.76	58.92	71.88
1841....	59.23	56.42	63.32	71.13	78.20	78.93	83.45	81.90	79.13	68.00	62.14	59.83	70.88	81.43	69.76	58.49	70.14
1842....	57.89	62.36	69.34	72.00	75.00	80.00	78.65	75.26	79.30	69.50	69.13	55.14	72.11	77.97	70.31	58.46	69.71
1843....	58.97	57.04	58.80	70.86	75.90	79.08	80.30	79.45	.....	.....	.....	.....	68.52	79.61	.....	.....	.....
1849....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	62.56	62.62	.....	.....	.....	.....	.....
1850....	52.87	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean of 6 years	57.26	58.29	64.14	71.13	76.60	80.26	81.20	80.23	78.63	70.47	61.50	56.00	70.62	80.56	70.20	57.18	69.64

\* At Fort Marion, thirty miles northward, and at the same distance as Fort Shannon from the sea, from October, 1838, to December, 1839, and for the first three months of 1841.

PICOLATA AND FORT HEILEMAN, FLORIDA; AND FORT HENDERSON, GEORGIA.

*Latitude 29° 48', Longitude 80° 45'.*\*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
P. 1840.	.....	.....	.....	.....	.....	.....	.....	.....	76.95	74.61	61.00	57.61	.....	.....	70.85	.....	.....
P. 1841.	61.21	56.80	64.30	72.60	73.46	78.60	81.70	80.50	79.10	.....	.....	.....	70.12	80.27	71.57	58.54	70.12
H. 1838.	61.40	53.40	62.60	.....	.....	.....	.....	.....	.....	66.98	60.60	52.91	.....	.....	.....	55.90	.....
H. 1839.	53.31	56.07	60.11	65.83	75.07	81.41	80.25	79.71	77.07	72.23	60.74	48.08	67.00	80.46	70.01	52.49	67.49
H. 1840.	51.35	59.90	67.10	74.26	76.58	82.34	.....	.....	.....	70.91	57.38	54.82	72.65	.....	.....	55.36	.....
H. 1841.	59.23	56.42	63.32	71.65	74.48	.....	.....	.....	.....	.....	.....	.....	69.82	.....	.....	.....	.....
H'n 1838	.....	.....	.....	.....	.....	.....	.....	.....	.....	67.33	59.33	54.50	.....	.....	.....	.....	.....
H'n 1839	55.64	58.27	64.46	70.52	76.26	82.03	80.16	79.76	77.54	.....	.....	.....	70.41	80.65	68.07	56.14	68.82
H. mean	56.32	56.45	64.28	70.58	75.38	81.88	80.25	79.71	77.07	70.04	69.57	51.94	70.08	80.61	72.23	54.90	69.46

\* The latitude of Fort Heileman is the same, the longitude 82° 05'; Fort Henderson, latitude 30° 51', longitude 82° 09'.

NEW SMYRNA, EAST FLORIDA.

*Latitude 28° 54', Longitude 81° 02'. Altitude 20 feet.*

1840....	64.35	66.33	65.55	75.05	72.76	78.64	78.56	78.32	78.06	72.77	69.33	64.53	71.12	78.51	73.39	65.07	72.02
1841*....	64.81	63.15	65.60	.....	74.21	78.81	81.70	79.50	77.83	70.50	65.00	62.50	.....	80.00	71.11	63.49	.....
1842....	63.00	65.00	72.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1853....	57.44	60.48	66.64	72.15	76.76	79.07	79.05	78.60	78.59	72.62	.....	.....	71.85	78.91	.....	.....	.....
Mean....	62.40	63.74	67.57	73.60	74.24	78.84	79.77	78.81	78.16	71.96	67.17	63.51	71.80	79.14	72.43	63.22	71.65

\* At Fort Mellon, a few miles inland, from May, 1841, to March, 1842.

FORT PIERCE, (CAPRON,) EAST FLORIDA.

*Latitude 27° 30', Longitude 80° 20'. Altitude 30 feet.*

1840....	64.27	66.77	69.33	74.08	76.44	78.62	79.61	78.95	78.65	75.89	64.41	61.51	73.28	79.06	72.65	64.18	72.29
1841....	65.46	62.51	67.76	.....	71.92	75.83	.....	.....	.....	71.00	64.67	62.71	.....	.....	.....	73.56	.....
1842....	.....	.....	.....	72.50	74.25	76.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1851....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	71.53	61.83	.....	.....	.....	.....	.....
1852....	54.91	64.97	69.82	71.23	78.68	80.06	80.02	81.96	79.94	75.81	70.78	70.24	73.24	80.68	75.51	63.37	73.20
1853....	60.03	62.83	73.77	79.27	81.82	81.03	86.21	85.23	81.61	74.54	74.07	59.21	78.29	84.16	76.74	60.69	74.97
1854....	67.91	67.33	73.01	71.10	78.41	82.09	84.16	83.37	83.18	77.72	65.90	60.30	74.17	83.21	75.60	65.18	74.54
1855....	63.90	62.24	64.91	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean....	62.75	64.42	69.77	73.63	76.92	79.02	82.50	82.38	80.85	75.00	68.56	62.63	73.44	81.30	74.80	63.27	73.20

FORT DALLAS,° EAST FLORIDA.

*Latitude 25° 55', Longitude 80° 20'. Altitude 20 feet.*

1839....	.....	68.44	71.77	72.82	79.15	82.41	81.11	82.61	78.75	78.51	71.87	63.07	74.58	82.04	76.38	.....	.....
1840....	65.07	69.12	72.53	77.91	78.92	81.63	82.24	81.63	79.50	78.20	67.59	64.75	76.45	81.83	75.10	66.31	74.92
1841....	68.71	65.44	70.31	75.25	75.67	78.62	81.40	78.42	77.45	.....	.....	.....	73.74	79.48	.....	.....	.....
1850....	.....	.....	.....	79.06	79.22	80.50	83.74	84.45	82.64	77.17	74.36	72.57	.....	82.90	78.06	.....	.....
1855....	65.35	63.24	66.73	72.82	76.90	79.71	.....	.....	.....	.....	.....	.....	72.15	.....	.....	.....	.....
Mean..	66.38	66.56	70.45	75.57	77.97	80.57	82.12	81.80	79.59	77.96	71.27	66.80	74.66	81.50	76.27	66.58	74.75

\* At Fort Lauderdale from January to September, 1839, and from July to September, 1840. This post is a few miles north of Fort Dallas, and at the same distance from the sea.

KEY WEST, FLORIDA.

*Latitude 24° 32', Longitude 81° 48'. Altitude 10 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1891....	67.49	69.38	75.08	75.96	77.96	80.39	81.88	81.57	81.44	77.97	75.32	69.58	76.10	81.28	78.24	68.82	76.11
1892....	68.40	74.28	72.35	75.42	80.17	80.62	83.28	80.54	80.38	75.55	71.14	70.56	75.98	81.48	75.69	71.08	76.06
1893....	68.25	71.67	72.03	.....	.....	.....	.....	.....	.....	.....	.....	68.47	.....	.....	.....	69.46	.....
1894....	71.94	79.20	74.32	74.03	78.07	82.98	82.53	82.96	80.91	76.76	70.78	70.52	75.47	82.82	76.15	71.55	76.50
1895....	67.57	64.45	71.16	74.88	78.60	80.83	81.96	81.30	79.56	73.95	75.74	68.39	74.88	81.36	76.42	66.80	74.87
1896....	.....	.....	.....	.....	.....	.....	79.38	82.16	81.67	.....	.....	.....	.....	.....	.....	.....	.....
1897....	66.22	68.80	70.77	73.12	77.90	81.35	82.36	82.01	81.00	77.85	76.13	70.29	73.93	81.90	78.33	68.44	75.65
1898....	71.14	68.30	70.62	73.37	77.02	79.55	82.15	82.83	81.72	78.54	73.44	70.22	73.67	81.51	77.90	69.89	75.74
1843....	.....	.....	.....	78.14	81.22	84.02	85.24	84.17	82.12	79.89	77.06	72.88	.....	84.48	79.69	.....	.....
1844....	.....	68.70	70.96	75.00	78.93	81.34	83.64	83.94	83.50	78.80	77.29	69.23	74.96	82.97	79.86	.....	.....
1845....	69.98	68.90	74.06	77.05	78.63	80.68	83.52	.....	.....	.....	.....	.....	76.58	.....	.....	.....	.....
1849....	.....	.....	.....	.....	.....	.....	.....	84.17	82.96	78.98	.....	.....	.....	.....	.....	.....	.....
1850....	.....	.....	.....	.....	.....	.....	85.34	84.78	83.15	77.41	73.54	74.17	.....	.....	78.03	.....	.....
1851....	73.85	74.52	74.02	77.18	79.57	81.79	83.48	83.64	81.31	79.80	75.46	69.96	76.92	82.97	78.85	72.77	77.68
1852....	61.20	70.02	74.37	76.06	80.28	82.81	83.42	83.86	82.07	79.38	76.19	74.93	76.90	83.36	79.21	68.72	77.05
1853....	68.01	71.30	74.08	76.14	79.57	80.18	83.47	83.93	82.56	80.41	75.76	68.44	76.60	82.61	79.58	69.25	77.01
1854....	71.75	71.95	76.56	73.89	80.84	83.34	83.30	82.59	82.56	78.24	72.70	66.39	77.10	83.08	77.83	70.03	77.01
1855....	67.18	65.94	70.98	75.09	79.13	82.74	.....	.....	.....	.....	.....	.....	74.83	.....	.....	.....	.....
Mean / 11 Years	66.68	69.88	72.88	75.38	79.10	81.63	83.00	82.90	81.92	78.11	74.66	71.03	75.79	82.51	78.23	69.19	76.43

FORT MYERS, SOUTH FLORIDA.

*Latitude 26° 38', Longitude 82° 00'. Altitude 50 feet.*

1851....	65.45	69.02	69.89	73.88	78.68	79.59	81.71	83.41	80.40	78.29	72.74	64.59	71.15	81.57	77.14	66.35	74.80
1852....	58.16	68.01	73.55	74.28	81.95	82.41	83.50	82.93	82.89	78.40	74.07	72.42	76.59	82.94	78.45	66.19	76.04
1853....	63.59	67.51	71.57	76.23	80.76	80.66	84.38	84.43	81.12	77.65	72.50	61.70	76.19	83.16	77.09	64.27	75.18
1854....	67.56	67.39	73.74	71.07	79.13	82.35	81.91	81.85	82.59	76.72	66.70	60.18	74.65	82.04	75.34	65.04	74.27
Mean / 4 Years	63.39	67.98	72.19	73.86	80.13	81.25	82.87	83.15	81.75	77.76	71.50	64.72	75.30	82.41	77.00	65.36	75.04

FORT BROOKS, TAMPA BAY, FLORIDA.

*Latitude 28° 00', Longitude 82° 28'. Altitude 20 feet.*

1825....	60.41	64.61	67.39	72.50	78.50	80.71	80.72	78.99	78.46	76.90	70.50	58.70	72.60	80.11	75.29	61.24	72.39
1826....	57.31	69.54	72.90	74.77	79.74	79.11	81.55	80.06	81.57	76.27	66.75	60.21	75.80	80.24	74.86	62.39	73.32
1827....	56.86	69.68	70.47	75.38	78.01	81.35	82.85	82.73	81.16	74.79	69.42	67.62	74.63	82.31	75.12	64.72	74.19
1828....	69.77	71.51	64.51	69.84	76.07	80.47	81.17	81.70	79.33	73.94	68.28	69.98	70.14	81.11	73.85	70.42	73.83
1829....	59.82	62.21	60.12	.....	.....	.....	80.08	81.49	79.87	75.80	62.00	67.40	.....	.....	72.86	63.14	.....
1830....	61.08	63.55	67.53	71.25	77.40	81.51	82.40	81.67	79.25	74.29	70.36	65.59	72.07	81.86	74.63	63.41	72.99
1831....	56.05	60.09	68.19	72.27	74.67	79.64	81.06	81.09	81.15	75.55	67.69	59.60	71.71	80.60	74.80	58.58	71.65
1832....	60.73	70.01	66.45	70.55	77.38	80.71	.....	.....	.....	.....	.....	.....	71.46	.....	.....	.....	.....
1837....	.....	.....	.....	.....	.....	.....	84.11	81.09	78.93	75.00	66.95	63.96	.....	.....	73.63	.....	.....
1838....	64.99	59.61	64.71	70.08	72.90	78.07	78.29	78.85	77.50	72.32	67.04	61.93	69.00	78.40	72.32	62.18	70.45
1839....	61.91	61.86	65.32	71.59	75.88	81.23	81.46	82.13	80.56	77.19	68.39	54.75	71.60	81.71	75.38	59.51	72.10
1840....	57.89	65.51	68.37	75.87	76.00	78.11	77.71	78.56	76.86	73.04	63.31	59.15	73.41	78.15	71.07	60.85	76.87



## FORT BROOKE, TAMPA BAY, FLORIDA—Continued.

*Latitude 28° 00', Longitude 82° 28'. Altitude 20 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1841....	65.10	60.06	66.72	72.12	74.21	78.59	80.64	79.05	78.95	69.56	64.70	63.08	71.02	79.43	62.37	68.79	70.40
1842....	62.87	64.54	72.10	71.08	76.39	79.55	78.47	79.01	78.91	71.80	64.47	61.42	73.19	79.02	71.73	62.94	71.72
1843....	62.30	59.92	62.67	72.56	74.90	76.55	77.35	76.90	77.75	70.05	68.85	63.00	70.01	76.93	72.22	61.74	70.22
1844....	61.02	60.20	63.53	70.70	77.87	76.66	80.63	78.67	77.35	72.21	69.64	55.10	70.70	78.65	73.08	58.77	70.30
1845....	62.00	60.82	67.25	73.91	75.24	79.56	79.42	79.18	77.59	72.74	62.62	55.74	72.13	79.39	70.98	59.51	70.50
1846....	59.71	62.08	66.58	72.15	76.47	79.31	79.88	80.01	79.24	73.02	66.10	63.35	71.73	79.73	72.79	61.71	71.49
1847....	65.05	60.98	65.29	72.83	74.37	81.09	80.68	81.16	79.00	74.70	67.83	55.70	70.83	80.98	73.84	60.58	71.56
1848....	63.31	62.42	67.45	71.32	76.50	78.25	83.46	80.71	80.22	.....	63.17	71.59	71.74	80.80	.....	65.77	.....
1849....	63.61	61.39	71.60	72.41	79.22	80.71	81.70	83.22	81.96	75.83	69.37	70.05	74.41	81.88	75.72	65.02	74.26
1850....	70.45	64.64	70.92	73.62	76.41	78.61	80.86	81.74	81.36	72.02	.....	.....	73.65	80.40	.....	.....	.....
1851....	.....	.....	.....	72.27	76.46	78.66	80.16	80.22	76.33	73.87	66.61	58.81	.....	79.68	72.27	.....	.....
1852....	52.70	62.56	70.26	70.96	77.66	79.43	79.61	80.08	79.04	76.07	67.82	66.34	72.96	79.37	74.01	60.53	71.72
1853....	58.93	64.79	69.83	73.81	78.13	78.79	82.52	82.47	79.78	75.55	71.90	58.13	73.60	81.26	75.74	60.62	72.88
1854....	62.94	62.36	70.06	70.07	77.49	80.51	81.08	79.59	80.71	73.83	62.11	56.52	72.54	80.39	72.22	60.61	71.44
Mean { 25 yrs }	61.53	63.54	67.34	72.25	76.64	79.46	80.72	80.43	79.35	74.02	66.94	61.99	72.08	80.20	73.44	62.35	72.48

## FORT MEADE, FLORIDA.

*Latitude 28° 01', Longitude 82° 00'. Altitude 80 feet.*

1851....	.....	.....	.....	.....	76.35	79.32	80.24	80.82	76.49	72.57	65.89	57.68	.....	80.13	71.64	.....	.....
1852....	52.10	63.54	69.32	70.38	77.96	78.88	79.62	80.54	78.80	73.82	68.16	68.59	72.55	79.68	73.59	61.41	71.81
1853....	59.36	62.82	67.09	71.19	76.16	75.65	79.01	78.76	80.29	74.44	69.60	56.98	71.48	77.84	74.78	59.72	70.96
1854....	63.75	63.33	70.64	68.10	76.31	79.10	80.17	80.00	81.15	74.40	70.27	.....	71.68	79.75	75.27	.....	.....
Mean....	58.40	63.23	69.02	69.89	76.69	78.24	79.76	80.03	79.18	73.81	68.48	61.08	71.87	79.34	73.82	60.90	71.48

## FORT MICANOPY, FLORIDA.

*Latitude 29° 30', Longitude 82° 28'. Altitude 60 feet.*

1838....	.....	.....	.....	.....	.....	.....	80.99	81.63	77.13	.....	61.92	58.71	.....	.....	.....	.....	.....
1839....	68.20	60.00	63.07	70.27	77.42	83.91	81.23	80.47	78.51	72.81	63.14	52.48	70.25	81.87	71.49	60.23	70.96
1840....	55.59	64.78	69.90	77.46	78.21	78.64	76.80	77.64	75.85	73.35	60.00	55.89	75.19	77.69	69.73	58.75	70.34
1841....	62.10	56.15	64.30	67.83	73.96	77.03	81.68	78.45	78.10	66.50	57.77	55.81	68.70	79.25	67.46	58.02	68.36
1842....	56.10	60.82	72.33	72.56	76.90	76.93	79.40	78.51	79.87	69.30	62.20	57.10	73.60	78.28	70.46	58.01	70.09
Mean { 4½ yrs }	60.50	60.44	67.40	72.03	76.62	79.28	80.02	79.34	77.89	70.49	61.01	56.00	72.02	79.55	69.80	58.98	70.09

FORT KING, FLORIDA.

*Latitude 29° 10', Longitude 82° 10'. Altitude 50 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1832....	.....	.....	.....	.....	.....	.....	.....	.....	.....	75.14	66.44	63.05	.....	.....	.....	.....	.....
1833....	60.23	63.45	65.00	74.01	79.56	85.26	84.70	84.75	81.42	72.55	61.15	56.83	72.86	84.90	71.71	60.17	72.41
1834....	61.39	67.11?	66.11	72.62	78.10	84.61	83.34	82.51	81.62	72.96	62.81	61.68	72.27	83.49	72.46	63.39	72.90
1835....	56.78	52.86	61.20	70.47	78.17	*78.41	77.93	78.71	74.23	68.76	68.58	56.67	69.95	78.35	70.52	55.44	68.56
1836....	56.92	51.50	61.71	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1837....	.....	.....	.....	.....	.....	.....	81.26	79.35	74.93	.....	.....	.....	.....	.....	.....	.....	.....
1840....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	61.53	55.83	.....	.....	.....	.....	.....
1841....	60.14	55.98	62.52	68.07	71.72	74.95	80.94	78.74	77.33	66.20	59.56	57.21	67.44	78.21	67.70	57.78	67.78
1842....	57.39	58.50	69.65	71.90	74.38	75.78	75.85	76.50	79.56	67.75	62.28	58.56	71.98	76.04	69.86	58.15	69.01
1843....	56.49	55.04	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean of 1832-43	58.48	58.21	64.36	71.41	76.39	79.78	80.80	80.09	78.18	70.56	63.19	58.55	70.72	80.22	70.64	58.41	70.00

\* Position of thermometer changed in May, (1835,) to a more favorable one. In June, received a new thermometer, which ranged 2° lower than the old one.—Assistant Surgeon Robert Archer.

FORTS HARLEE, RUSSELL, WHELOCK, HOLMES, AND WACAHOOTEE, INTERIOR OF FLORIDA.

H. 1838	.....	.....	.....	.....	.....	.....	85.33	85.92	77.95	.....	.....	.....	.....	.....	.....	.....	.....
R. 1840	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	57.11	.....	.....	.....	.....	.....
R. 1841	63.00	58.00	66.00	72.00	77.00	79.00	84.00	81.50	78.00	67.49	59.78	59.69	71.67	81.50	68.42	60.23	70.46
R. 1842	60.60	56.00	74.00	71.17	74.00	79.21	.....	.....	.....	.....	.....	.....	73.06	.....	.....	.....	.....
Wh 1841	62.40	56.40	64.60	.....	.....	.....	81.90	81.09	79.40	69.70	62.68	59.33	.....	.....	70.59	59.38	.....
H's 1841	62.75	57.64	64.48	71.50	73.58	78.40	.....	.....	.....	.....	.....	.....	69.85	.....	.....	.....	.....
Wa 1841	61.00	56.00	64.00	69.67	72.00	75.00	80.00	78.00	77.00	65.67	59.33	56.33	68.56	77.67	64.00	57.78	67.00
Wa 1842	57.25	55.07	70.12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

NOTE.—These posts are in the vicinity of Forts King and Micanopy. Their local topography is similar to that of these and other posts in the interior of Florida.

CEDAR KEYS, FLORIDA.

*Latitude 29° 07', Longitude 83° 03'. Altitude 35 feet.*

1840....	.....	.....	.....	.....	.....	.....	81.29	80.45	78.03	76.03	60.76	57.00	.....	.....	71.61	.....	.....
1841....	59.33	57.08	63.90	70.12	76.36	78.43	82.70	81.00	78.78	68.38	63.21	57.80	70.11	80.71	70.12	58.07	69.75
1842....	57.77	59.79	67.42	69.66	73.14	76.66	76.90	76.66	80.16	71.07	62.91	58.23	70.05	76.74	71.38	58.60	69.19
Mean...	58.55	59.46	65.66	69.86	74.72	77.55	80.30	79.37	78.99	71.83	62.29	57.68	70.08	79.07	71.04	58.22	69.60

FORT WACASSASSA,\* FLORIDA.

1840....	.....	.....	.....	.....	.....	.....	.....	.....	.....	73.39	57.83	54.84	.....	.....	.....	.....	.....
1841....	61.58	57.53	65.65	71.90	73.84	76.80	81.42	80.78	78.16	66.90	59.80	57.13	70.46	79.67	68.29	58.75	69.29
1842....	55.97	58.25	68.10	69.00	73.22	77.43	76.90	77.93	78.77	68.85	61.46	58.06	70.11	77.42	69.69	57.43	68.66
Mean...	58.78	57.89	66.87	70.45	73.53	77.11	79.66	79.85	78.46	69.71	59.70	55.68	70.28	78.87	69.29	57.45	68.97

\* About thirty miles northeast from Cedar Keys. Fort Fanning is at the same distance north northeast on the Suwanee river.

## FORT FANNING, FLORIDA.

*Latitude 29° 35', Longitude 83° 00'. Altitude 50 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1840....	.....	.....	.....	.....	.....	.....	.....	.....	.....	71.38	58.03	50.26	.....	.....	.....	.....	.....
1841....	62.20	56.82	63.64	70.90	75.68	78.50	83.35	84.01	79.45	74.52	63.33	60.03	70.07	81.95	72.43	59.68	71.03
1842....	57.16	59.71	70.35	70.44	75.64	79.75	79.75	80.38	81.45	70.50	60.50	54.81	72.14	79.96	70.81	57.23	70.03
Mean...	59.68	58.26	67.00	70.67	75.66	79.12	81.55	82.20	80.45	72.13	60.62	55.03	71.11	80.96	71.07	57.66	70.20

## FORTS PLEASANT AND GAMBLE, MIDDLE FLORIDA.\*

P. 1841.	.....	.....	.....	.....	.....	.....	81.74	80.71	78.30	67.80	61.67	58.97	.....	.....	69.26	.....	.....
P. 1842.	59.13	61.71	73.90	72.10	76.71	82.33	79.88	79.93	81.13	.....	.....	.....	74.24	80.71	.....	.....	.....
G. 1840.	52.95	61.25	65.82	71.29	73.85	78.37	78.70	79.02	.....	.....	.....	.....	70.32	78.70	.....	.....	.....
G. 1841.	.....	.....	.....	.....	.....	79.44	81.20	80.85	78.00	66.90	61.62	54.71	.....	80.50	68.84	.....	.....
G. 1842.	58.11	59.85	70.90	70.77	76.50	81.30	76.93	78.33	78.41	67.93	57.35	53.58	72.72	78.85	67.90	57.18	69.16
Mean...	55.53	60.55	68.36	71.03	75.17	79.70	78.94	79.40	78.20	67.41	59.48	54.64	71.52	79.35	68.36	56.91	69.04

\* These posts are from ten to thirty miles southeast from Tallahassee, and ten to twenty miles from the Gulf coast at Apalachee bay. Lat. 30° 20', long. 84°.

## FORT BARRANCAS, PENSACOLA, FLORIDA.\*

*Latitude 30° 18', Longitude 87° 27'. Altitude 20 feet.*

1822....	51.85	51.34	61.47	68.82	77.78	84.16	81.87	82.22	77.92	69.87	65.86	54.49	69.36	82.75	71.22	52.56	68.97
1823 ...	53.16	50.49	63.41	70.62	79.36	79.72	81.92	81.42	77.90	68.96	55.62	56.51	71.13	81.02	67.49	53.39	68.26
1824....	55.62	53.80	65.88	67.35	75.79	81.30	83.55	82.86	77.00	68.73	61.44	55.98	69.34	82.57	69.06	55.13	69.02
1826....	51.45	58.71	67.46	70.72	78.08	79.96	82.88	81.90	78.57	72.03	62.73	54.50	72.09	81.58	71.11	54.89	69.92
1827....	51.36	64.10	63.23	72.13	72.12	81.39	84.62	82.15	78.87	68.99	62.37	62.06	69.16	82.72	70.08	59.17	70.28
1828....	62.30	61.13	62.94	65.55	76.13	81.04	82.20	82.20	76.22	69.53	62.00	62.00	68.21	81.85	69.25	61.81	70.28
1829....	54.76	52.27	56.07	65.12	73.93	82.94	83.68	83.14	81.94	73.75	59.29	60.94	65.04	83.25	71.66	55.99	68.73
1842....	.....	.....	.....	.....	.....	.....	81.10	80.66	76.86	71.42	61.46	55.27	.....	.....	69.91	.....	.....
1843....	56.25	54.96	52.14	70.03	75.58	79.86	80.32	80.12	82.53	68.56	64.90	56.09	63.92	80.10	71.99	55.77	68.44
1844....	56.27	57.41	60.90	69.62	78.44	80.43	83.64	80.75	77.95	68.76	63.11	52.43	69.65	81.61	69.94	55.37	69.14
1845....	54.96	56.17	60.74	70.86	73.54	79.26	81.40	.....	.....	.....	56.91	45.37	68.38	.....	.....	52.17	.....
1846 ...	52.11	53.53	62.02	66.90	.....	.....	80.27	79.92	78.60	67.91	61.93	57.82	.....	.....	69.48	54.49	.....
1847....	50.80	54.02	57.69	69.28	71.82	.....	.....	.....	.....	.....	.....	.....	66.26	.....	.....	.....	.....
1849....	58.20	53.09	66.62	68.02	74.56	79.96	79.36	.....	.....	.....	.....	.....	69.73	.....	.....	.....	.....
1851....	54.00	58.98	60.94	67.96	74.66	80.73	83.04	81.37	76.68	.....	58.83	52.40	67.85	81.71	.....	55.12	.....
1852....	44.16	57.15	.....	.....	.....	.....	81.48	80.28	77.85	71.35	60.00	61.64	.....	.....	69.73	54.32	.....
1853....	49.37	54.69	62.30	69.27	74.45	79.42	81.38	81.49	76.83	.....	.....	51.71	68.67	80.76	.....	.....	.....
1854....	54.71	54.56	64.98	62.93	73.40	81.00	84.55	84.10	81.44	71.34	58.89	49.60	67.77	83.22	70.56	52.96	68.63
Mean { 17 yrs }	53.61	55.58	61.80	68.51	75.45	80.80	82.26	81.64	78.47	70.08	61.02	55.57	68.59	81.57	69.66	54.92	68.74

\* The first seven years of this series were observed at *Cantonment Clinch*, three miles from Pensacola, and fourteen from Barrancas, which is at the entrance of the harbor.



## FORT MORGAN, ALABAMA.

*Latitude 30° 14', Longitude 88° 00'. Altitude 20 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1835....	55.32	46.20	55.41	64.04	75.65	77.56	80.06	80.31	75.46	.....	.....	.....	65.03	79.31	.....	.....	.....
1841....	.....	.....	.....	.....	.....	.....	82.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1842....	.....	.....	.....	64.16	74.48	79.91	82.34	80.30	79.06	71.26	59.00	52.00	.....	80.65	69.77	.....	.....
1843....	54.86	54.17	51.16	68.43	76.70	80.08	81.96	.. ..	.....	.....	.....	.....	65.43	.....	.....	.....	.....
Mean..	55.19	50.18	53.28	65.54	75.61	79.19	81.50	80.30	77.26	71.26	59.00	52.00	64.81	80.33	69.17	53.68	67.00

## MOUNT VERNON ARSENAL, ALABAMA.

*Latitude 31° 12', Longitude 88° 02'. Altitude 200? feet.*

1840....	.....	.....	.....	.....	.....	.....	78.83	74.12	67.65	55.92	50.53	.....	.....	65.93	.....	.....	.....
1841....	50.50	53.00	58.00	67.00	72.25	77.00	.....	.....	.....	.....	.....	65.75	.....	.....	.....	.....	.....
1842....	.....	.....	66.50	67.12	73.00	78.50	76.70	75.50	74.60	65.82	55.03	49.05	68.87	76.90	65.15	.....	.....
1843....	52.50	50.70	47.70	69.50	75.30	76.66	82.35	78.21	78.86	63.61	59.56	49.61	64.17	79.07	67.34	50.94	65.38
1844....	.....	.....	.....	.....	77.51	78.42	81.17	78.16	73.97	62.65	57.07	47.40	.....	79.25	64.56	.....	.....
1845....	51.30	53.14	55.73	70.49	73.59	80.08	81.36	81.04	74.30	62.62	53.03	42.53	66.60	80.83	63.32	48.99	64.93
1846....	48.93	50.63	61.57	61.18	72.72	76.52	77.43	78.19	77.60	65.17	58.87	57.23	66.16	77.38	67.21	52.26	65.75
1847....	47.40	55.02	57.09	69.99	70.53	77.90	77.08	77.33	71.45	66.30	57.84	47.11	65.87	77.44	65.20	49.84	64.57
1848....	52.98	56.61	60.44	64.50	73.95	74.89	78.22	77.82	72.76	65.59	51.19	57.98	66.30	76.98	63.18	55.86	65.58
1849....	53.00	49.86	65.14	64.75	72.50	76.00	76.27	79.05	74.50	64.21	58.90	54.22	67.46	77.41	65.87	52.36	65.77
1850....	56.30	51.66	61.55	66.61	73.18	76.90	79.89	81.61	78.33	66.96	55.57	52.04	67.11	79.47	66.95	53.33	66.72
1851....	51.26	57.04	59.12	67.52	71.89	79.83	81.82	79.22	75.53	66.83	54.79	49.82	67.17	80.29	65.71	52.71	66.47
1852....	42.15	59.55	64.17	64.42	76.43	79.60	82.99	82.14	79.01	70.58	56.87	59.51	68.34	81.34	68.82	53.74	68.06
1853....	47.48	53.84	61.22	70.96	74.31	79.86	78.55	80.44	75.70	65.88	61.10	47.31	68.83	79.62	67.56	49.54	66.39
1854....	51.52	53.18	65.24	62.30	74.64	79.17	78.90	81.17	79.58	69.17	54.76	49.22	67.39	79.75	67.84	51.31	66.57
Mean / 14 yrs	50.44	53.69	60.26	66.87	73.92	78.03	78.62	79.19	75.03	65.93	56.47	51.04	67.02	78.68	65.81	51.72	65.81

## BAY OF ST. LOUIS, PASS CHRISTIAN, AND EAST PASCAGOULA, MISSISSIPPI.\*

St. L. 1833	.....	.....	.....	.....	.....	.....	84.54	81.40	79.19	.....	.....	.....	.....	.....	.....	.....	.....
St. L. 1834	.....	.....	.....	.....	.....	.....	83.08	82.60	78.91	.....	.....	.....	.....	.....	.....	.....	.....
St. L. 1835	.....	.....	.....	68.80	78.76	78.92	79.07	80.23	75.30	.....	.....	.....	.....	79.41	.....	.....	.....
C. 1843	.....	.....	.....	.....	.....	.....	81.76	80.00	80.00	67.95	.....	.....	.....	.....	.....	.....	.....
C. 1844	.....	.....	.....	.....	.....	.....	82.92	81.60	78.68	68.45	.....	.....	.....	.....	.....	.....	.....
C. 1845	.....	.....	.....	.....	.....	.....	82.70	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
P. 1848	.....	.....	.....	.....	.....	.....	.....	79.85	74.31	70.11	55.88	.....	.....	.....	66.77	.....	.....
P. 1849	.....	.....	.....	.....	.....	.....	.....	85.10	81.01	69.78	66.00	.....	.....	.....	72.26	.....	.....
P. 1850	.....	.....	.....	.....	.....	.....	.....	86.08	83.44	.....	.....	.....	.....	.....	.....	.....	.....
P. 1851	.....	.....	.....	.....	75.80	83.05	85.17	84.05	80.46	.....	.....	.....	.....	84.09	.....	.....	.....
P. 1852	.....	.....	.....	.....	78.11	80.84	83.98	83.25	80.89	.....	.....	.....	.....	82.69	.....	.....	.....
P. 1853	.....	.....	.....	.....	.....	.....	82.63	84.31	80.10	.....	.....	.....	.....	.....	.....	.....	.....
Mean..	.....	.....	.....	68.80	77.56	80.94	82.87	82.63	79.11	69.07	60.94	.....	.....	82.14	69.71	.....	.....

\* These are summer stations for troops stationed at New Orleans and other posts of the vicinity, and their position and exposure are so nearly alike as to permit combination of the observations in one result. *Pass Christian* in latitude 30° 20', longitude 89° 25'; *East Pascagoula*, latitude 30° 20', longitude 86° 42'.

FORT PIKE, LOUISIANA.

*Latitude 30° 10', Longitude 89° 38'. Altitude 10 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1824....	.....	.....	.....	.....	.....	.....	.....	.....	.....	69.88	.....	.....	.....	.....	.....	.....	.....
1825....	52.42	56.94	68.45	68.79	78.60	81.93	83.62	85.48	78.11	.....	.....	.....	71.95	83.68	.....	.....	.....
1826....	.....	.....	.....	.....	.....	.....	85.09	84.26	79.87	73.55	63.64	55.11	.....	.....	72.02	.....	.....
1827....	50.81	65.08	62.66	72.15	73.19	83.61	84.50	82.41	80.63	69.19	62.53	62.74	69.33	83.51	70.78	59.54	70.79
1828....	60.00	64.67	64.33	70.47	79.08	83.43	83.26	83.32	78.62	74.04	67.03	64.28	71.29	83.34	73.23	62.98	72.71
1829....	55.63	51.17	58.55	65.78	75.52	82.72	82.96	83.33	81.51	72.28	60.84	61.15	66.62	83.00	71.54	55.98	60.28
1830....	57.51	59.56	68.17	71.60	77.63	82.05	85.10	84.83	81.56	72.99	67.99	59.52	72.47	83.99	74.18	58.20	72.21
1831....	49.31	51.54	65.77	69.45	74.46	80.97	83.24	80.48	78.17	70.91	63.49	47.27	69.89	81.56	70.86	49.37	67.92
1832....	54.57	65.27	63.52	71.21	77.90	80.58	82.26	83.83	78.21	72.10	60.11	59.42	70.88	82.22	70.14	59.75	70.75
1833....	58.76	60.21	62.10	72.49	78.79	82.76	82.63	81.11	81.32	67.87	61.02	58.37	71.29	82.17	70.07	58.45	70.49
1834....	51.41	58.88	64.57	71.26	76.44	82.93	83.13	84.28	78.22	72.11	62.69	56.67	70.76	83.45	71.01	55.65	70.22
1835....	54.37	47.21	58.15	67.49	80.21	82.42	.....	.....	.....	69.90	64.89	55.54	68.62	.....	.....	52.37	.....
1836....	55.11	55.17	60.77	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1838....	62.33	51.09	63.79	72.93	71.89	83.16	85.46	85.19	78.05	.....	.....	.....	.....	.....	.....	.....	.....
1842....	.....	.....	.....	.....	.....	.....	79.20	79.00	75.75	67.84	57.76	51.06	.....	.....	67.12	.....	.....
1843....	52.47	52.30	49.65	71.40	77.60	80.10	81.45	81.45	79.80	67.75	64.65	54.70	66.22	81.00	70.73	53.16	67.78
1844....	56.20	57.55	61.58	72.11	81.10	81.47	85.06	82.29	78.33	67.07	59.60	52.66	71.60	82.94	68.33	55.47	69.58
1845....	55.29	57.70	61.65	73.64	75.96	82.59	83.97	.....	.....	.....	.....	45.38	70.42	.....	.....	52.79	.....
1846....	49.98	54.51	63.83	67.03	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean of 14 yrs {	54.76	56.86	62.34	70.55	77.03	82.19	83.39	82.94	79.16	70.53	62.80	55.77	69.97	82.84	70.83	55.80	69.86

FORT WOOD, LOUISIANA.

*Latitude 30° 08', Longitude 89° 51'. Altitude 20 feet.*

1832....	.....	.....	.....	.....	.....	83.00	82.27	77.62	72.00	62.28	57.65	.....	.....	70.63	.....	.....	.....
1833....	59.55	60.52	60.38	70.88	78.02	82.51	83.56	83.18	81.26	66.20	58.05	54.23	69.76	83.08	65.17	58.10	69.03
1834....	50.48	61.26	63.79	71.29	75.93	82.93	.....	.....	.....	.....	.....	70.60	.....	.....	.....	.....	.....
1835....	51.65	49.64	60.43	68.00	79.54	81.80	81.07	83.01	76.58	69.95	63.71	53.87	69.33	81.96	70.08	51.54	68.28
1843....	54.58	52.38	51.41	71.12	78.30	78.24	81.45	80.21	80.58	68.20	65.15	55.90	66.94	79.97	71.31	54.29	68.13
1844....	57.60	58.36	61.62	72.12	79.92	81.59	84.26	82.03	79.07	68.20	61.81	53.42	71.22	82.63	69.69	56.46	70.00
1845....	55.59	58.05	61.33	73.49	75.76	80.76	82.60	82.15	78.21	67.03	.....	.....	70.19	81.84	.....	.....	.....
1846....	53.93	54.53	62.40	69.29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean of 6 1/2 yrs {	54.77	56.44	60.19	70.88	77.91	81.30	82.66	82.14	78.90	68.60	62.20	55.01	69.66	82.03	69.90	55.41	69.25

NEW ORLEANS, LOUISIANA.

*Latitude 29° 57', Longitude 90° 00'. Altitude 10 feet.*

1825....	53.26	53.33	67.80	66.90	81.82	88.54	82.95	84.33	80.17	.....	62.60	44.04	72.17	85.27	.....	50.21	.....
1826....	53.20	63.27	70.71	72.54	77.61	83.24	84.16	85.15	80.64	72.97	65.55	58.28	73.62	84.18	73.05	58.25	72.27
1827....	56.74	66.85	64.31	73.03	74.00	82.65	.....	.....	.....	67.57	62.04	62.00	70.11	.....	.....	61.86	.....
1828....	64.58	66.01	65.34	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1832....	.....	.....	.....	66.50	74.25	78.64	82.75	82.52	77.65	.....	.....	.....	.....	81.30	.....	.....	.....
1833....	55.37	60.35	60.71	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1834....	.....	.....	.....	.....	.....	.....	.....	.....	.....	70.74	63.08	59.10	.....	.....	.....	.....	.....

## NEW ORLEANS, LOUISIANA—Continued.

*Latitude 29° 57', Longitude 90° 00'. Altitude 10 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1835....	41.02	50.70	61.29	.....	.....	.....	.....	.....	.....	69.73	65.81	58.11	.....	.....	.....	49.94	.....
1838....	56.61	52.38	64.10	67.19	68.65	82.07	82.47	82.11	77.35	68.39	57.07	52.85	66.65	82.22	67.60	53.95	67.61
1839....	56.22	54.48	60.96	70.98	77.33	83.03	82.48	82.25	79.22	75.39	57.40	48.09	69.76	82.59	70.67	52.93	68.99
1840....	55.09	61.77	69.15	74.38	77.30	79.97	85.56	84.96	78.91	74.32	65.66	56.13	73.61	83.50	72.96	57.66	71.93
1841....	55.46	55.61	64.81	71.62	76.17	84.35	87.02	83.86	79.48	69.17	61.83	55.40	70.87	85.08	70.16	55.49	70.40
1842....	56.96	58.50	71.35	69.80	74.96	80.56	80.25	79.58	78.63	69.03	59.06	53.29	72.03	80.13	68.91	56.25	69.33
1843....	55.43	54.16	52.03	70.85	75.79	78.50	.....	.....	.....	.....	68.13	55.77	66.22	80.08	69.03	55.12	67.61
1844....	58.54	59.28	63.55	72.52	78.46	79.80	.....	.....	.....	.....	65.02	57.18	71.51	81.51	70.75	58.33	70.52
1845....	57.25	59.91	62.11	72.75	73.20	79.46	.....	.....	.....	.....	.....	.....	69.35	.....	.....	.....	.....
1846....	.....	.....	61.50	67.16	75.28	80.14	82.73	.....	.....	68.82	63.94	62.14	67.98	.....	.....	.....	.....
1847....	54.85	57.30	61.90	71.48	76.56	78.75	81.82	82.68	77.85	71.16	64.37	53.25	69.98	81.08	71.13	55.13	69.33
1848....	58.18	61.67	64.33	68.39	76.47	82.86	80.42	81.25	79.51	73.67	59.58	59.43	69.73	81.51	70.92	59.76	70.48
1849....	60.89	56.08	70.17	71.00	76.82	81.08	81.10	.....	.....	.....	.....	.....	72.63	.....	.....	.....	.....
1850....	59.31	55.32	63.89	68.13	72.26	76.12	82.54	.....	.....	66.41	60.58	55.49	68.09	.....	.....	56.71	.....
1851....	54.43	59.79	61.64	68.24	.....	.....	.....	.....	.....	69.67	60.89	55.21	.....	.....	.....	56.48	.....
1852....	46.59	62.10	66.96	67.27	.....	.....	.....	.....	.....	74.25	61.37	61.98	.....	.....	.....	56.89	.....
1853....	50.65	56.51	62.70	70.42	74.33	80.23	.....	.....	.....	.....	.....	.....	69.15	.....	.....	.....	.....
Mean 20 yrs }	55.27	58.35	64.15	70.06	75.62	81.11	82.94	82.77	78.94	70.75	62.44	55.98	69.94	82.27	70.71	56.53	69.86

## FORTS ST. PHILIP AND JACKSON, LOUISIANA.\*

*Latitude 29° 25', Longitude 89° 30'. At sea level.*

StP 1826	...	.....	.....	.....	.....	.....	83.36	80.34	80.83	74.27	64.59	59.50	.....	.....	73.23	.....	.....
StP 1828	62.81	64.22	60.85	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
StP 1831	48.32	48.24	57.20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
J...1831	.....	.....	.....	.....	.....	.....	82.35	80.07	80.89	71.80	68.05	47.59	.....	.....	73.58	.....	.....
J...1832	61.14	67.17	66.82	72.55	78.13	81.52	84.21	83.95	79.96	76.81	65.87	65.39	72.83	82.89	73.21	64.57	73.62
J...1833	64.44	63.17	62.59	.....	.....	.....	.....	.....	.....	.....	61.96	58.75	.....	.....	.....	62.12	.....
J...1834	60.58	64.32	65.73	72.16	75.87	82.46	.....	.....	.....	68.95	54.45	63.64	.....	.....	.....	62.65	.....
J...1835	59.53	53.30	60.51	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean ..	59.47	60.14	62.37	72.86	77.00	81.99	82.97	81.45	80.56	72.96	62.98	58.97	70.78	82.14	72.17	59.53	71.15

\* The posts are on opposite sides of the Mississippi river, fifty miles southeast of New Orleans, and twenty miles from the Delta proper. The coast of the Gulf is much nearer at the southwest.

## BATON ROUGE, LOUISIANA

*Latitude 30° 26', Longitude 91° 18'. Altitude 41 feet.*

1822....	52.37	49.71	62.05	67.99	78.16	84.80	81.20	81.07	76.15	66.67	63.94	51.77	69.40	82.36	68.92	51.28	67.99
1824....	57.13	51.41	64.90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1825....	49.80	57.58	64.79	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1828....	.....	.....	.....	.....	.....	.....	.....	.....	.....	71.39	62.81	60.76	.....	.....	.....	.....	.....
1829....	56.37	49.90	55.57	63.80	74.35	81.87	80.70	80.43	77.17	70.14	57.51	57.31	64.57	81.00	68.27	54.53	67.09
1830....	54.61	57.07	64.81	65.87	73.04	79.47	82.43	82.63	78.31	70.27	63.59	54.62	67.91	81.51	70.72	55.43	68.89
1831....	46.16	48.61	61.41	66.46	73.00	79.84	80.89	76.58	75.79	66.25	57.67	43.57	66.96	79.10	66.57	46.11	64.68



BATON ROUGE, LOUISIANA—Continued.

*Latitude 30° 26', Longitude 91° 18'. Altitude 41 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1832....	49.86	61.77	61.00	68.41	75.27	78.55	82.16	81.48	76.19	68.51	58.75	57.98	68.23	80.73	67.82	56.54	68.44
1833....	57.85	58.11	58.62	70.49	77.87	82.63	83.55	82.31	79.18	63.56	57.56	54.59	68.99	82.83	66.77	56.85	68.61
1834....	50.08	60.56	63.23	70.01	75.69	83.86	83.02	82.29	74.32	68.61	60.00	55.35	69.64	83.06	67.64	55.33	68.92
1835....	55.19	45.52	56.38	64.89	77.88	81.09	78.43	80.01	73.31	66.39	59.70	54.16	66.38	79.84	66.47	51.62	66.08
1836....	55.11	54.82	56.92	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1837....	.....	.....	.....	66.41	76.71	81.61	85.56	85.14	79.25	71.39	65.74	53.79	.....	84.10	72.13	.....	.....
1838....	54.14	45.94	63.71	73.05	72.31	83.86	84.05	83.05	76.82	.....	.....	.....	69.69	83.65	.....	.....	.....
1839....	54.52	51.19	61.95	74.08	78.96	84.65	82.05	80.23	79.86	65.80	54.18	50.27	71.66	82.31	66.61	51.99	68.14
1840....	55.82	63.59	71.56	77.95	77.59	82.02	81.52	82.44	78.37	.....	.....	.....	75.70	81.99	.....	.....	.....
1843....	55.08	54.50	51.47	72.76	76.98	79.74	82.09	80.80	80.10	65.02	66.46	55.75	67.07	80.78	70.53	55.11	68.37
1844....	57.35	59.49	61.77	77.91	77.10	78.75	81.84	80.24	75.41	66.28	63.43	50.94	70.26	80.28	68.37	55.93	68.71
1845....	54.79	56.77	59.86	70.99	73.90	79.80	80.92	80.65	76.63	66.23	57.68	47.23	68.25	80.46	66.85	52.93	67.12
1846....	52.00	54.10	62.30	68.07	75.60	78.86	81.37	80.21	80.01	67.13	62.64	59.60	68.66	80.14	69.93	55.23	68.49
1847....	49.84	.....	.....	.....	.....	80.08	80.05	81.04	.....	.....	.....	.....	.....	80.36	.....	.....	.....
1848....	.....	.....	.....	.....	.....	77.40	81.23	82.18	74.65	69.69	54.13	58.04	.....	80.27	66.18	.....	.....
1849....	58.16	54.30	67.81	67.63	.....	.....	79.77	83.42	78.45	68.51	64.18	61.41	.....	.....	70.38	57.96	.....
1850....	64.01	58.51	63.47	72.84	76.90	78.59	84.81	83.67	78.57	65.47	.....	51.17	71.07	82.36	.....	57.90	.....
1851....	52.94	57.16	61.17	67.32	75.21	78.80	81.43	80.19	75.14	65.43	55.06	51.72	67.90	80.14	65.21	53.94	66.80
1852....	42.78	59.81	65.87	64.53	74.42	77.74	79.69	79.17	75.11	68.32	56.00	58.06	68.27	78.86	66.48	53.55	66.79
1853....	47.38	53.62	59.60	68.61	71.65	78.35	78.59	79.79	.....	65.82	....	51.10	66.62	78.91	.....	50.70	.....
1854....	53.43	56.48	66.24	64.63	75.10	80.61	80.09	81.52	78.11	69.95	57.07	52.17	68.66	80.74	68.38	54.03	67.95
Mean } 24 yrs }	53.47	55.02	61.93	69.30	75.60	80.56	81.81	81.26	77.14	67.58	59.90	54.15	68.94	81.21	68.21	54.21	68.14

FORT JESUP, LOUISIANA.

*Latitude 31° 33', Longitude 93° 32'. Altitude 80? feet.*

1823....	51.00	43.33	60.66	71.57	77.10	77.87	83.04	83.21	75.95	69.81	58.45	57.40	69.78	81.37	68.07	50.58	67.45
1824....	58.98	54.25	63.92	64.44	76.55	84.81	85.93	83.87	77.98	66.03	57.94	56.61	68.30	84.90	67.32	56.61	69.28
1825....	52.69	59.83	64.67	66.97	77.75	80.98	82.79	85.11	77.56	63.77	57.10	45.11	69.80	82.96	66.14	52.54	67.86
1826....	46.82	57.76	68.49	70.23	77.91	79.82	85.45	83.98	76.07	68.75	60.28	52.83	72.21	83.08	68.37	51.80	68.86
1827....	51.05	62.85	60.33	69.54	72.22	81.45	83.62	82.96	81.55	67.17	60.29	57.65	67.36	82.68	69.67	57.18	69.22
1828....	55.64	58.86	61.19	64.97	74.94	82.79	83.33	82.11	73.45	67.75	59.43	54.57	67.03	82.74	66.88	56.36	68.25
1829....	51.79	45.27	53.08	62.34	74.31	80.55	81.20	79.35	77.28	68.56	55.63	53.09	63.24	80.37	67.16	50.05	63.20
1830....	50.44	50.58	62.01	64.42	70.82	79.30	82.93	83.08	77.27	70.10	59.29	48.12	65.75	81.77	68.89	49.71	66.53
1831....	41.43	45.37	59.43	66.07	72.75	80.93	81.09	76.58	73.53	62.74	53.76	38.67	66.08	79.53	63.34	41.82	62.69
1832....	46.54	55.26	58.29	67.74	73.94	78.76	82.29	80.99	75.73	64.76	53.33	53.34	66.66	80.68	64.61	52.51	66.16
1833....	55.79	53.85	55.87	67.44	75.07	81.15	83.95	83.82	78.63	61.85	56.70	53.10	66.13	82.97	65.73	54.20	67.27
1834....	44.95	60.61	62.15	69.83	73.61	82.88	82.06	82.12	72.95	69.07	61.55	50.15	68.53	82.35	67.86	51.90	67.66
1835....	50.21	43.64	55.34	63.44	70.76	80.53	79.58	80.68	73.66	64.77	53.92	52.37	63.18	80.26	61.12	48.54	64.07
1836....	50.74	54.14	55.08	67.85	70.57	76.67	80.35	78.58	75.69	59.84	49.61	46.58	64.50	78.53	62.05	50.49	63.89
1837....	45.21	50.36	55.73	62.57	71.50	79.66	80.44	80.44	74.27	67.56	63.65	51.50	63.27	80.18	68.49	49.02	65.24
1838....	51.12	42.79	61.27	69.12	68.54	80.94	81.00	80.07	74.27	64.44	52.17	45.83	66.31	80.67	63.63	46.58	64.30
1839....	52.63	50.36	59.71	70.59	73.30	81.85	81.25	83.51	78.53	73.03	55.46	48.85	67.87	82.20	69.01	50.61	67.42
1840....	50.49	57.38	64.52	71.30	73.87	80.08	82.06	83.30	76.39	70.07	55.03	50.59	69.90	81.81	67.16	52.82	67.92

FORT JESUP, LOUISIANA—Continued.

*Latitude 31° 33', Longitude 93° 32'. Altitude 80? feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1841....	45.09	51.89	58.13	69.69	70.75	78.22	84.21	80.19	73.50	62.62	56.34	48.73	66.19	80.87	64.15	48.57	64.94
1842....	53.14	56.13	64.12	70.43	76.92	82.68	78.16	78.65	76.93	64.79	50.74	47.02	70.59	80.14	64.15	52.10	66.74
1843....	54.25	47.90	41.60	69.65	75.34	77.30	81.75	76.25	78.60	61.82	57.99	48.30	62.20	78.43	66.14	50.15	64.23
1844....	52.82	53.88	57.51	70.66	76.57	79.18	83.20	80.94	73.68	60.93	56.54	48.43	68.25	81.11	63.72	51.71	66.20
1845....	51.72	55.65	57.42	68.64	70.49	77.41	81.10	.....	76.56	65.57	57.92	43.91	65.52	.....	66.68	50.43	.....
Mean (23 yrs.)	50.63	52.69	59.45	67.80	73.72	80.25	82.22	81.35	76.09	65.90	56.66	49.68	66.99	81.27	66.22	51.00	66.39

FORT SABINE, LOUISIANA.

*Latitude 29° 45', Longitude 93° 50'. At sea level.\**

1837....	.....	.....	.....	.....	.....	.....	79.53	78.35	72.39	71.37	64.62	53.84	.....	.....	.....	.....	.....
1838....	51.60	43.82	59.12	70.26	(68.54)	79.05	.....	.....	.....	.....	.....	.....	65.97	79.00	69.46	49.75	66.05

\* The post was on the low shore of Sabine lake, eight miles from the Gulf of Mexico, southward, and surrounded by water and marsh lands.

FORT TOWSON, INDIAN TERRITORY.

*Latitude 34° 00', Longitude 95° 33'. Altitude 300? feet.*

1832....	39.59	.....	.....	.....	.....	.....	79.39	75.20	69.98	61.16	47.80	47.00	.....	.....	59.65	.....	.....
1833....	51.29	45.34	46.99	63.56	72.24	72.84	85.70	80.55	74.44	57.81	49.33	43.83	60.93	79.70	60.53	46.83	62.00
1834....	32.32	50.49	55.14	65.93	68.95	79.52	80.93	81.94	67.57	62.54	56.69	42.19	63.34	80.80	62.27	41.63	62.01
1835....	44.30	34.94	51.12	60.14	72.06	76.87	76.51	76.03	68.14	59.75	43.04	45.09	61.11	76.47	56.98	41.44	59.00
1836....	41.17	44.77	47.94	61.59	69.66	75.63	78.76	79.39	74.16	58.51	48.22	41.36	59.73	77.93	60.30	42.43	61.00
1837....	40.51	46.91	52.94	58.68	66.75	77.44	81.85	80.20	72.21	64.31	57.98	45.80	59.12	79.83	64.83	44.41	62.05
1838....	43.69	34.18	56.90	66.42	62.98	78.80	82.02	81.06	70.54	59.06	43.95	37.12	62.10	80.63	57.85	38.33	59.74
1839....	46.76	46.31	56.19	68.66	72.53	79.17	82.88	80.05	72.57	66.34	47.44	39.99	65.79	80.70	62.12	44.39	63.25
1840....	42.20	49.91	57.93	65.99	70.94	76.81	80.08	83.21	71.77	60.30	50.96	44.72	64.95	80.03	61.01	45.61	62.90
1841....	42.14	49.73	52.97	62.93	68.95	73.76	81.76	76.06	66.69	56.28	46.97	35.42	61.62	77.19	56.65	42.43	59.47
1842....	43.03	53.70	65.12	67.86	73.58	78.76	80.96	78.61	76.60	63.06	46.26	33.22	68.85	79.44	61.97	46.65	64.24
1843....	49.40	43.60	39.00	66.51	70.30	75.10	78.80	75.95	76.15	59.10	53.50	45.65	58.60	76.02	62.92	46.18	61.08
1844....	44.40	49.22	51.73	68.36	72.53	77.91	82.80	80.75	71.97	59.64	53.16	42.33	64.21	80.49	61.59	45.32	62.90
1845....	46.55	50.71	52.20	67.70	68.49	77.31	81.59	79.73	75.44	60.10	49.50	35.79	62.80	79.54	61.68	44.36	62.09
1846....	43.60	42.60	53.85	61.27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1849....	.....	.....	.....	.....	.....	76.11	78.18	79.16	74.26	59.11	56.53	42.00	.....	77.82	63.30	.....	.....
1850....	46.10	47.13	53.48	59.81	67.22	76.06	80.57	82.49	75.28	63.12	51.71	39.29	60.17	76.37	63.37	44.14	61.01
1851....	44.31	44.88	56.25	60.38	71.91	78.30	82.23	82.54	78.75	63.25	47.60	.....	62.51	81.02	63.20	.....	.....
1852....	.....	.....	.....	.....	.....	.....	.....	.....	68.17	66.05	48.80	43.68	.....	.....	58.34	.....	.....
1853....	41.78	43.75	51.84	64.24	67.25	78.02	79.69	81.40	73.40	60.27	54.95	42.48	61.11	79.70	62.87	42.67	61.59
1854....	36.32	49.29	59.55	61.90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean (23 yrs.)	43.14	45.97	53.40	64.00	69.77	76.97	80.82	79.69	72.53	61.04	50.24	42.65	62.39	79.16	61.27	43.92	61.69

FORT WASHITA, INDIAN TERRITORY.

*Latitude 34° 14', Longitude 96° 38'. Altitude 645 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1843...	47.50	41.70	36.50	65.80	69.70	76.70	80.30	77.00	75.40	58.90	52.40	47.20	57.17	75.00	62.23	45.47	60.72
1844....	45.42	51.16	53.44	68.27	73.41	77.13	82.39	82.54	71.20	60.64	54.99	45.91	65.04	80.69	62.25	47.30	63.84
1845....	47.29	53.64	53.17	69.15	69.25	78.88	84.31	79.18	76.06	60.71	49.52	40.88	63.57	80.12	62.10	46.67	63.51
1846....	47.80	44.90	55.94	63.46	72.53	74.79	81.76	81.09	73.17	65.69	55.00	45.37	63.99	79.58	65.44	47.02	64.68
1847....	35.83	45.60	49.16	67.72	66.90	76.34	79.47	78.48	73.46	65.52	51.16	44.00	60.96	78.17	63.38	41.51	63.36
1848....	47.44	51.72	55.95	58.59	71.82	75.37	79.74	81.68	73.73	61.25	44.57	32.03	60.12	75.73	60.68	43.73	63.56
1849...	36.96	44.90	58.66	61.55	69.33	76.04	77.83	79.58	73.85	60.74	57.65	41.49	63.28	77.92	61.88	41.12	61.00
1850....	47.06	46.29	52.96	59.59	66.31	74.62	81.01	80.41	77.64	67.73	59.57	37.16	59.59	79.64	65.38	46.59	62.36
1851....	43.93	44.15	56.55	60.84	72.09	79.56	82.41	84.71	80.25	61.72	46.70	42.24	63.37	82.20	62.89	43.45	62.98
1852...	37.71	49.41	55.20	58.05	69.59	73.51	78.62	78.17	69.77	64.90	47.68	41.37	60.91	70.70	60.78	42.33	60.32
1853....	42.05	42.37	51.44	63.94	65.46	76.90	78.41	81.59	74.88	60.78	54.18	42.63	60.25	75.94	63.61	42.35	61.14
1854....	36.76	45.94	60.41	61.43	69.83	75.45	83.13	83.40	77.20	67.88	51.36	43.70	63.58	80.67	65.05	43.13	63.18
Mean of 12 yrs.	42.91	47.07	53.81	63.18	69.93	76.23	80.78	80.86	74.84	63.29	51.61	42.40	62.16	79.29	63.25	44.14	62.21

FORT SMITH, ARKANSAS.

*Latitude 35° 23', Longitude 94° 29'. Altitude 460 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1842....	42.99	44.77	61.50	63.54	69.64	74.73	77.19	74.56	72.49	57.75	41.36	35.34	61.89	75.51	57.20	41.84	59.61
1843....	41.70	36.83	31.53	60.23	67.72	74.83	78.79	74.83	73.71	54.14	47.53	40.25	53.16	73.00	58.58	39.59	56.83
1844....	38.24	45.77	48.12	66.58	71.15	76.71	81.13	76.82	68.06	56.20	48.65	37.94	61.95	78.22	57.69	40.25	59.61
1845....	43.49	47.39	50.05	68.82	68.77	78.61	82.47	78.27	72.85	55.34	44.95	31.33	62.49	79.78	57.02	40.75	60.15
1846....	39.82	38.70	52.46	62.56	71.24	73.59	80.65	73.80	73.73	61.55	51.21	46.47	62.69	77.65	62.93	41.66	61.03
1847....	34.43	40.17	47.96	65.71	65.76	75.71	77.56	75.88	71.01	62.94	47.73	42.40	59.88	76.48	60.37	38.57	74.87
1848....	44.87	48.07	52.09	59.61	72.61	75.07	79.01	79.45	68.74	60.93	50.75	34.01	61.64	77.81	57.53	42.32	59.83
1849....	35.78	40.91	57.65	59.46	64.43	76.80	79.86	80.36	74.32	60.82	59.60	40.90	69.51	79.01	64.71	39.20	60.86
1850....	46.50	51.51	57.78	58.51	67.27	70.02	.....	.....	.....	.....	.....	.....	62.22	.....	.....	.....	.....
1852....	.....	.....	.....	58.92	67.91	72.74	73.07	76.51	69.66	60.78	46.33	39.69	.....	74.10	50.72	.....	.....
1853....	40.20	41.67	50.66	63.97	64.93	76.21	77.93	80.57	71.53	58.79	53.14	39.50	59.55	78.24	61.15	40.56	59.95
1854....	39.92	47.01	57.01	60.62	67.51	75.48	80.15	82.70	77.38	64.70	47.97	40.83	61.71	80.41	63.35	40.59	61.72
Mean of 12 yrs.	40.18	43.89	51.53	62.38	69.91	75.55	79.10	78.07	72.23	59.65	48.80	39.27	61.29	77.60	60.08	41.11	60.02

FORT GIBSON, INDIAN TERRITORY.

*Latitude 35° 47', Longitude 95° 10'. Altitude 560 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1827....	.....	.....	.....	.....	.....	.....	81.93	82.93	78.58	66.66	57.71	46.68	.....	.....	67.41	.....	.....
1828....	44.26	47.63	54.74	59.06	71.36	81.16	81.75	82.04	69.72	66.02	55.39	47.86	61.72	81.65	63.71	46.58	63.34
1829....	44.32	28.65	48.82	59.51	74.16	73.69	80.76	82.92	75.08	62.67	50.14	30.79	60.66	80.59	60.00	41.15	61.26
1830....	47.61	47.43	57.46	65.26	69.95	80.62	81.95	84.88	79.04	69.15	54.84	49.46	64.22	82.48	68.34	45.19	67.08
1831....	39.14	34.54	53.70	63.13	68.69	75.94	82.71	78.06	70.69	60.23	50.34	31.59	61.64	78.24	60.42	52.19	58.12
1832....	41.81	41.92	55.21	64.25	69.67	77.11	80.25	77.38	72.20	62.94	50.43	47.43	63.04	78.31	61.86	48.72	61.76
1833....	47.52	44.42	50.47	63.93	70.93	76.36	81.63	80.70	73.43	57.50	50.28	34.82	61.78	73.57	61.74	45.25	62.08
1834....	25.17	50.30	52.54	67.88	72.31	79.31	83.06	88.22	73.87	65.81	54.97	41.06	64.24	83.70	64.88	39.84	60.16
1835....	42.83	32.74	51.19	60.17	71.48	78.55	77.93	77.89	70.19	61.06	48.19	43.64	60.95	78.12	58.15	39.57	59.19
1836....	40.48	43.06	46.14	65.44	71.26	74.78	79.45	80.12	74.54	56.69	47.83	39.56	60.95	78.42	59.49	41.03	59.90



FORT GIBSON, INDIAN TERRITORY—Continued.

*Latitude 35° 47', Longitude 95° 10'. Altitude 560 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1897....	36.92	44.54	50.20	55.74	66.56	76.68	83.91	82.91	72.24	65.44	59.19	48.52	57.43	81.17	65.02	41.66	61.47
1898....	40.99	28.31	50.70	65.70	62.28	79.21	88.67	83.18	74.42	56.40	40.37	33.65	60.56	81.82	57.06	34.32	58.44
1899....	43.69	43.30	58.68	68.96	71.55	76.84	82.79	82.53	74.64	67.21	47.24	39.73	64.73	80.38	63.03	42.24	62.59
1840....	36.82	46.41	54.41	63.49	69.10	77.15	77.74	78.36	69.33	59.78	45.92	42.22	62.37	77.75	58.34	41.62	60.07
1841....	35.27	41.27	52.14	61.85	68.14	75.59	81.95	80.04	69.72	59.70	51.35	42.69	60.71	79.17	59.26	39.54	59.67
1842....	45.90	46.57	62.22	64.13	70.12	73.89	77.72	75.96	74.36	60.67	43.86	41.12	65.49	75.35	59.63	44.53	61.25
1843....	43.30	38.17	39.50	62.40	66.93	74.50	76.83	74.17	78.20	56.65	39.25	45.20	56.28	75.15	61.70	42.22	58.84
1844....	40.67	47.31	50.45	66.30	69.89	75.77	80.00	77.40	68.67	57.91	50.41	41.73	62.21	77.72	59.00	43.24	60.54
1845 ...	46.24	50.65	50.54	68.46	67.02	77.25	83.80	78.94	75.58	58.25	47.12	34.40	62.01	79.83	60.32	43.76	61.48
1846....	42.74	38.44	52.61	61.87	70.00	71.32	79.74	78.95	74.50	62.44	52.59	45.93	61.49	76.67	63.18	42.37	60.93
1847....	39.55	42.73	47.16	66.01	65.52	72.75	77.92	74.52	70.29	61.56	52.57	41.16	59.56	75.06	61.47	39.15	58.81
1848....	45.83	49.11	53.13	57.30	70.72	75.83	77.95	76.68	68.00	62.39	43.81	30.48	60.38	76.82	58.07	41.81	59.27
1849....	33.19	39.65	55.81	60.46	68.87	75.77	77.79	77.30	72.59	56.45	54.61	36.69	61.72	76.95	61.22	36.51	59.10
1850....	42.15	42.39	49.42	55.85	66.63	76.54	81.00	83.78	75.45	62.48	50.52	36.01	57.18	80.44	62.85	40.51	60.23
1851....	41.91	42.27	54.69	58.23	72.26	77.16	82.50	84.80	78.32	60.76	44.34	36.81	61.53	81.49	61.14	40.33	61.12
1852....	34.82	47.03	54.00	58.80	70.13	74.31	81.60	76.97	69.36	63.96	44.95	37.39	60.97	77.62	59.43	39.74	59.44
1853....	39.63	39.90	49.40	63.31	64.79	78.11	80.23	82.36	73.31	59.80	53.11	41.22	59.17	80.23	62.07	40.25	60.43
1854....	33.72	46.38	56.57	60.49	67.61	75.74	84.62	85.20	79.61	66.67	47.30	41.50	61.56	81.85	64.53	40.53	62.12
Mean 27 yrs.	40.15	42.41	52.19	62.13	68.79	76.82	80.76	80.24	73.50	61.56	49.72	40.84	61.04	79.41	61.66	41.13	60.81

FORT SCOTT, MISSOURI.

*Latitude 37° 45', Longitude 94° 35'. Altitude 1000? feet.*

1843....	37.11	28.05	24.55	53.95	63.50	71.95	75.45	73.40	70.70	50.90	42.35	37.90	47.33	73.60	54.65	34.35	52.48
1844....	30.55	36.70	45.34	63.27	64.36	72.07	80.27	74.24	62.85	51.84	42.00	35.25	57.66	75.53	52.23	34.17	54.90
1845....	39.94	42.71	45.85	62.50	65.01	72.23	78.34	76.02	69.29	52.23	39.61	25.37	57.79	75.53	53.63	36.01	55.75
1846....	37.33	29.93	46.05	57.34	63.97	69.26	78.40	75.55	70.09	54.83	44.91	37.31	57.45	74.50	56.61	34.56	55.85
1847....	22.70	33.32	37.17	57.33	61.57	70.93	76.06	72.23	67.38	56.27	41.35	33.59	52.21	73.07	55.00	29.97	52.56
1848....	37.41	39.63	45.21	53.81	68.53	72.71	74.94	76.03	64.77	56.42	35.28	21.95	55.85	74.58	52.16	33.01	53.90
1849....	22.91	30.10	49.03	53.17	63.47	73.60	75.12	74.58	63.79	52.61	50.14	29.88	54.22	74.43	57.19	27.46	58.07
1850....	34.66	35.59	42.27	48.53	61.57	73.47	79.34	81.24	71.63	58.20	46.00	27.41	50.89	78.02	58.64	32.55	55.02
1851....	33.71	36.32	48.14	53.46	69.50	73.40	78.23	76.63	73.59	53.11	39.02	31.30	57.03	76.09	56.90	33.73	55.95
1852....	28.45	39.11	47.82	53.23	67.62	71.46	76.03	75.07	67.17	61.40	33.40	31.13	56.24	74.18	55.65	32.91	54.74
1853....	35.24	33.30	43.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean 10 yrs.	32.91	34.93	43.13	55.72	63.43	72.11	77.22	75.53	68.62	55.28	41.91	31.09	54.79	74.95	55.27	32.99	54.50

JEFFERSON BARRACKS, MISSOURI.

*Latitude 38° 28', Longitude 90° 15'. Altitude 472 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1827....	32.09	44.55	50.98	61.22	65.52	73.62	80.15	81.67	72.95	53.98	50.40	39.69	59.24	78.48	60.73	35.58	59.27
1828....	37.17	42.52	49.43	55.55	70.03	80.69	79.41	81.56	67.89	50.75	50.55	44.85	58.44	80.55	56.40	41.61	59.25
1829....	36.81	20.52	42.60	60.17	73.73	77.21	76.82	76.97	65.80	5.87	37.11	42.31	58.83	77.00	53.26	30.33	55.53
1830....	32.79	37.55	48.00	61.53	66.36	75.68	79.78	78.74	67.63	60.74	51.43	42.05	58.63	78.67	59.93	37.50	58.61
1831....	21.58	27.22	43.87	.....	.....	.....	75.46	71.96	63.05	53.78	40.85	18.54	.....	.....	52.33	22.43	.....
1832....	31.10	31.17	50.35	58.88	63.85	80.55	76.53	73.94	66.64	58.60	41.99	36.88	57.69	77.01	56.84	33.65	56.07
1833....	38.13	35.59	42.76	61.31	70.68	73.38	81.24	79.28	71.21	52.13	44.83	38.80	58.25	77.97	56.06	37.44	57.43
1834....	21.54	44.04	45.29	59.81	67.56	75.91	81.60	81.27	64.98	54.98	45.21	32.45	57.55	79.39	55.06	32.68	56.22
1835....	33.64	21.75	42.02	54.05	69.73	74.47	74.41	73.10	61.42	59.26	40.79	35.00	55.27	73.99	53.82	30.13	56.39
1836....	.....	.....	.....	.....	.....	.....	.....	.....	.....	46.79	39.25	29.17	.....	.....	.....	.....	.....
1837....	23.52	37.37	40.73	49.15	61.70	70.52	77.05	75.63	65.03	.....	.....	.....	.....	74.40	.....	.....	.....
1838....	.....	.....	.....	52.56	57.57	73.53	79.77	77.53	67.22	51.82	32.43	25.61	.....	77.04	50.52	.....	.....
1839....	37.06	36.95	43.89	62.11	62.52	69.10	73.81	72.40	65.76	63.95	38.03	28.02	56.24	71.77	55.91	30.68	53.65
1840....	24.96	39.48	44.23	52.73	.....	76.44	76.16	76.99	76.12	55.00	41.66	34.82	.....	76.33	53.89	33.09	.....
1841....	27.53	30.22	44.57	53.16	65.61	74.61	79.56	75.15	67.75	53.70	44.33	34.59	54.45	76.51	55.26	30.78	54.25
1842....	38.70	37.02	58.72	64.81	65.12	71.09	75.09	71.79	71.24	59.64	37.67	34.38	62.88	72.66	56.13	36.70	57.19
1843....	36.16	23.78	25.50	52.66	63.34	72.56	73.88	74.56	70.00	49.56	42.61	37.12	47.83	74.07	54.66	32.35	52.23
1844....	31.32	37.72	44.03	62.91	65.20	70.87	77.58	73.78	64.99	52.73	44.05	36.52	57.38	77.73	53.94	35.19	56.67
1845....	39.13	43.05	46.32	65.63	66.86	77.62	79.85	76.80	70.40	54.45	41.53	25.03	59.60	77.99	55.48	35.74	57.20
1846....	37.78	33.62	46.85	59.85	69.65	69.32	78.42	77.63	72.93	53.39	45.08	38.59	58.62	75.14	57.80	35.46	56.76
1847....	.....	.....	37.57	.....	.....	69.60	77.41	.....	67.86	.....	.....	31.64	.....	.....	.....	.....	.....
1848....	38.40	40.99	42.42	56.61	63.58	71.48	72.51	73.97	63.83	54.46	37.98	31.68	54.87	75.99	52.09	37.65	55.00
1849....	23.06	31.18	49.46	55.28	65.15	73.53	75.19	74.87	67.41	52.24	49.71	29.38	56.63	74.53	56.79	29.54	54.37
1850....	34.04	35.36	42.51	48.54	62.27	76.11	81.44	80.18	69.57	57.46	47.28	31.04	51.14	79.24	58.09	33.48	55.43
1851....	35.48	38.29	48.13	50.83	68.27	73.62	79.53	76.05	73.53	57.52	41.09	39.78	55.74	76.40	57.38	34.52	56.11
1852....	23.20	38.33	48.25	53.81	67.27	71.76	77.60	73.60	67.81	63.90	39.41	35.50	56.27	74.82	57.04	34.61	55.41
1853....	36.30	33.73	44.37	57.42	64.46	78.48	76.66	77.07	70.84	53.81	49.98	34.51	55.42	77.40	58.21	34.55	56.47
1854....	28.48	40.04	48.34	56.79	68.44	74.73	85.80	82.12	75.89	61.19	44.21	36.02	57.86	80.90	60.43	34.85	58.51
Mean / 26 yrs.	32.53	35.16	45.08	57.06	66.32	74.11	78.09	76.46	68.07	55.63	43.15	33.81	56.15	76.19	55.63	33.85	55.46

ST. LOUIS ARSENAL, MISSOURI.

*Latitude 38° 40', Longitude 90° 05'. Altitude 450 feet.*

1843....	.....	22.54	25.28	56.03	66.79	74.80	79.83	76.82	72.59	38.99	41.74	35.93	49.37	77.15	55.91	31.54	53.49
1844....	31.44	26.57	42.11	64.83	66.23	75.29	81.03	74.84	66.75	51.04	44.45	36.13	55.74	77.25	54.08	34.81	55.97
1845....	38.60	40.51	44.34	60.99	61.71	73.50	79.32	75.85	75.03	53.95	40.55	24.13	55.68	76.22	56.51	34.44	55.71
1846....	37.20	27.93	45.71	54.91	68.97	71.11	79.95	77.87	72.88	54.05	42.73	37.46	56.53	76.81	56.44	34.29	55.86
1847....	24.64	33.41	38.06	56.65	62.19	72.04	78.60	74.10	67.85	52.88	43.63	31.30	52.30	75.11	54.61	29.78	54.86
1848....	35.57	37.90	42.16	51.08	66.14	73.19	76.65	74.67	62.96	54.23	37.25	30.20	53.13	74.81	51.43	34.56	56.49
1849....	25.12	28.44	46.40	53.36	63.96	70.69	75.94	73.71	66.62	53.39	49.12	28.96	54.57	73.14	55.31	27.51	53.13
1850....	34.03	33.76	41.33	48.55	61.47	75.61	78.88	77.89	67.81	54.14	44.72	29.83	50.45	77.79	55.89	31.24	53.72

## ST. LOUIS ARSENAL, MISSOURI—Continued.

*Latitude 38° 40', Longitude 90° 05'. Altitude 450 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1851....	42.78	36.31	46.32	59.61	66.49	73.41	78.07	77.09	71.71	55.13	39.59	29.21	54.47	75.95	55.41	32.69	54.63
1852....	27.84	35.28	46.79	52.00	65.93	72.19	78.12	79.57	67.40	59.91	48.18	33.37	71.90	74.09	55.26	32.16	54.25
1853....	33.25	31.88	42.35	56.76	61.78	73.13	76.00	76.27	69.01	51.70	46.96	32.14	74.69	76.80	55.69	32.42	54.95
1854....	26.47	36.66	46.10	55.41	66.36	71.75	82.25	81.30	75.38	59.70	41.78	34.34	55.96	79.43	58.89	32.16	56.61
Mean of 12 years	31.44	33.43	42.80	55.08	65.67	74.20	78.22	76.16	69.58	54.20	42.55	31.93	54.15	76.19	55.44	32.27	54.51

Mean for sixteen years at St. Louis, 1833 to 1848, by Dr. Engelmann, 55° 27' degrees.

## NEWPORT BARRACKS, KENTUCKY.

*Latitude 39° 05', Longitude 84° 29'. Altitude 500 feet.*

1847....	.....	.....	.....	.....	.....	.....	75.60	75.25	70.51	55.04	46.52	33.67	.....	.....	57.36	.....	.....
1848....	36.76	37.60	43.25	55.54	69.08	73.88	75.50	75.60	68.75	54.61	39.98	41.27	56.29	74.79	52.85	38.84	55.57
1849....	33.68	31.08	49.00	54.50	65.20	76.44	75.19	73.50	66.77	55.25	51.15	32.14	56.23	75.01	57.72	32.10	55.27
1850....	37.47	35.54	42.44	51.16	59.32	71.61	79.59	76.50	66.87	54.40	47.19	.....	51.30	76.91	56.15	.....	.....
1851....	36.42	42.87	48.55	53.32	67.13	72.46	76.30	75.16	69.77	55.48	43.67	31.25	56.33	74.64	56.11	36.86	55.93
1852....	27.26	37.95	46.62	51.01	61.37	68.97	76.74	72.20	65.79	60.44	41.92	30.15	51.60	72.64	56.05	35.12	54.45
1853....	25.52	34.55	41.60	55.00	63.93	76.10	73.41	74.43	67.86	51.35	45.98	34.88	53.51	74.61	55.06	34.98	54.54
1854....	31.75	39.60	46.71	53.20	64.00	72.13	79.54	78.13	74.34	59.75	41.89	35.37	54.65	76.60	58.66	35.57	56.37
Mean of 7 years	34.64	33.91	45.66	53.39	64.72	73.49	76.48	75.02	68.21	55.81	44.71	34.81	54.52	75.00	56.24	35.27	55.26
Mean of 18 years	33.50	34.10	43.40	54.50	63.50	71.10	76.80	73.70	65.50	53.60	42.30	33.80	53.90	73.70	53.60	33.80	53.70

The last summary is of observations at Cincinnati by Professor Ray.

## DETROIT, MICHIGAN.\*

*Latitude 42° 20', Longitude 82° 58'. Altitude 580 feet.*

1836....	.....	.....	.....	44.97	56.76	63.39	67.15	66.52	58.13	39.96	33.12	24.79	.....	63.69	43.74	.....	.....
1837....	21.57	24.29	29.84	38.61	51.08	62.74	66.22	65.41	58.74	46.95	39.59	26.63	39.94	64.79	48.43	24.16	41.93
1838....	27.72	12.11	38.77	39.63	50.62	63.12	73.78	68.67	59.51	62.66	29.51	17.60	33.62	70.19	43.83	19.14	44.65
1839....	25.69	27.38	32.77	50.74	59.85	65.62	72.67	66.67	55.68	57.46	38.04	28.03	47.79	68.12	50.38	27.03	48.33
1840....	20.87	33.28	35.19	48.14	60.78	66.75	67.86	66.57	56.89	48.43	37.80	28.39	48.04	67.06	47.71	27.35	47.54
1841....	25.96	25.76	31.47	42.64	51.89	67.16	68.06	68.16	61.81	45.64	36.83	31.31	41.80	68.13	48.76	27.65	46.57
1842....	32.67	31.74	44.89	49.17	51.13	60.36	66.29	67.21	61.00	51.14	34.93	29.77	49.40	64.65	49.62	31.30	48.59
1843....	30.48	19.45	22.45	46.83	54.35	64.33	66.00	66.03	65.48	44.62	34.05	31.35	41.21	65.47	48.35	27.03	45.51
1844....	23.43	29.37	34.90	34.57	58.39	63.98	70.73	66.67	62.25	47.27	38.11	30.63	49.32	67.13	49.21	27.61	48.32
1845....	30.67	29.32	39.70	48.60	55.40	66.17	70.92	71.92	59.70	48.85	35.50	21.95	47.90	69.67	48.01	27.31	48.22
1846....	20.72	24.62	30.85	50.03	62.92	66.27	.....	.....	.....	.....	.....	.....	39.93	.....	.....	.....	.....
1849....	24.69	26.73	39.16	45.69	56.11	69.55	72.60	69.84	63.81	49.71	46.77	26.95	46.96	70.76	53.43	25.89	49.26
1850....	30.77	29.66	35.37	44.31	55.04	69.03	71.49	71.69	60.64	49.53	44.21	25.98	44.97	71.97	51.46	28.80	49.30
1851....	28.47	32.66	39.60	44.09	56.02	.....	.....	.....	.....	.....	.....	.....	46.79	.....	.....	.....	.....
Mean of 15 years	27.01	26.62	35.40	45.82	56.02	65.62	69.71	67.47	60.05	47.60	38.26	26.88	45.75	67.60	48.67	26.84	47.21

\* At Detroit Arsenal, Dearbornville, ten miles west of the city, to the close of 1859; subsequently at Detroit Barracks.



## FORT GRATIOT, MICHIGAN.

*Latitude 42° 55', Longitude 82° 23'. Altitude 598 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn.	Winter.	Year.
1880....	.....	.....	.....	52.00	54.40	61.93	73.59	71.23	62.26	55.80	45.56	28.03	.....	69.92	54.87	.....	.....
1881....	21.26	20.17	38.65	44.22	56.07	70.15	72.03	70.61	59.85	52.23	38.40	15.82	46.31	70.93	50.00	19.03	40.53
1882....	25.16	21.09	35.29	43.84	53.57	67.85	70.99	68.98	62.78	53.95	39.10	31.97	44.23	69.37	51.95	26.17	47.93
1883....	29.65	24.80	31.67	48.19	57.70	62.08	70.40	68.90	61.95	47.04	39.98	24.92	45.85	67.13	49.66	29.79	48.11
1884....	21.39	34.80	34.96	47.30	58.44	64.10	75.16	70.79	60.77	47.94	40.27	30.86	46.90	70.02	49.66	28.65	48.81
1885....	28.49	23.06	32.95	44.60	58.07	65.80	68.55	66.87	55.94	52.96	38.66	26.46	45.21	67.07	49.19	26.00	46.87
1886....	26.63	17.58	24.57	39.61	52.29	58.98	68.08	61.15	58.68	41.00	36.58	27.14	38.82	62.74	45.42	23.78	42.09
1887....	23.21	25.03	23.93	36.74	47.70	.....	.....	.....	.....	.....	.....	.....	37.81	.....	.....	.....	.....
1889....	.....	.....	.....	.....	.....	.....	69.64	65.15	55.32	55.43	34.24	26.09	.....	.....	43.33	.....	.....
1890....	16.71	31.42	34.75	46.26	58.69	65.87	68.15	69.32	68.93	40.87	35.59	24.61	46.57	67.78	46.90	24.25	46.95
1891....	23.70	20.31	30.87	40.32	50.18	64.20	71.60	69.65	63.27	44.61	37.48	31.13	40.46	68.48	48.45	25.05	45.61
1892....	30.26	29.46	39.28	48.05	51.36	58.41	64.84	66.52	58.23	50.10	34.71	27.93	46.23	68.26	47.63	29.22	46.60
1893....	29.18	18.46	19.96	39.94	50.00	60.46	63.32	67.81	63.50	44.90	34.80	31.90	36.63	68.56	47.73	26.51	43.63
1894....	22.57	28.82	33.62	39.40	58.18	60.97	66.82	65.25	60.43	45.56	36.24	29.79	45.40	64.35	47.41	26.39	46.64
1895....	28.46	29.43	38.49	44.49	52.13	63.18	69.52	69.69	58.81	47.94	36.05	20.64	45.65	67.46	47.60	26.13	46.57
1896....	26.53	22.96	34.63	45.36	56.54	62.15	.....	.....	.....	.....	.....	.....	45.51	.....	.....	.....	.....
1899....	.....	.....	.....	.....	.....	.....	70.33	65.87	60.00	48.53	45.25	25.53	.....	.....	51.24	.....	.....
1890....	29.43	26.89	29.62	41.71	48.91	66.87	71.25	68.67	57.48	48.03	42.25	24.42	40.03	68.93	49.23	26.91	43.79
1891....	25.67	29.55	35.09	40.83	53.16	62.00	67.56	64.34	62.46	50.76	35.14	24.63	43.62	64.63	49.45	26.62	45.93
1892....	21.90	26.17	31.01	36.61	50.80	.....	.....	.....	.....	.....	.....	.....	39.51	.....	.....	.....	.....
Mean 17½ yrs	25.30	25.26	33.16	44.08	53.80	63.44	69.55	67.10	60.31	48.66	38.24	26.55	43.68	66.70	49.07	25.70	46.20

## FORT MACKINAC, MICHIGAN.

*Latitude 45° 51', Longitude 84° 33'. Altitude 728 feet.*

1825....	.....	.....	.....	.....	.....	.....	.....	55.26	47.92	38.60	20.70	.....	.....	47.26	.....	.....
1826....	18.93	17.66	26.32	32.85	50.59	61.14	66.74	63.29	54.84	48.63	25.60	23.41	36.59	63.72	46.86	20.00
1828....	21.14	20.06	28.17	35.96	47.60	57.81	61.53	68.85	55.18	46.48	36.12	26.25	37.24	61.66	45.92	22.48
1829....	19.87	11.44	22.78	37.09	55.52	60.95	63.89	65.95	53.20	47.56	29.60	29.79	38.46	63.60	43.45	20.10
1830....	16.23	21.45	28.51	43.62	46.31	56.44	70.12	64.88	53.16	49.76	43.40	24.76	39.48	63.81	48.77	20.83
1831....	16.48	14.97	30.88	37.58	48.27	61.54	64.75	65.56	53.02	45.62	34.14	18.94	38.91	63.95	44.20	15.13
1832....	18.89	8.00	27.94	38.22	41.38	59.08	61.69	63.54	54.88	46.73	31.85	27.01	36.85	61.44	44.32	17.30
1833....	21.54	16.29	23.16	38.97	48.97	53.60	62.65	64.14	55.66	41.73	35.36	32.36	37.63	59.93	44.25	23.40
1834....	16.42	24.64	26.92	39.53	44.69	53.19	65.57	65.39	54.87	41.08	34.95	21.75	37.05	61.88	43.63	20.94
1835....	22.87	10.08	24.80	36.01	47.73	59.45	62.83	62.27	50.25	43.55	29.53	19.88	36.13	61.52	41.11	17.61
1836....	18.22	12.33	15.54	32.42	46.44	53.77	63.82	57.72	50.79	37.73	34.11	22.55	31.47	59.10	40.88	17.70
1837....	17.44	17.89	20.07	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1842....	26.49	24.01	33.42	40.93	45.30	51.61	61.62	65.90	55.90	47.88	32.50	24.59	39.88	59.71	45.26	25.63
1843....	25.40	9.25	16.87	36.56	44.88	56.56	59.82	64.98	57.70	42.29	30.60	27.75	32.60	60.45	43.53	20.80
1844....	16.23	23.61	26.29	42.42	48.81	54.10	63.64	62.64	55.92	43.46	34.81	24.44	39.17	60.13	44.60	21.43
1847....	22.67	22.53	30.01	36.33	47.78	56.60	64.15	64.45	53.76	44.10	31.78	19.86	38.04	61.73	43.21	21.69
1846....	23.92	18.00	30.14	38.32	50.41	58.77	66.00	68.07	61.25	42.64	37.97	25.82	39.62	64.28	46.95	22.58
1847....	13.14	15.56	19.60	33.32	45.70	53.12	65.41	60.97	52.19	43.69	32.60	22.57	32.87	59.83	42.88	17.49
1848....	20.86	20.69	23.21	37.31	48.11	.....	.....	.....	.....	.....	.....	20.73	36.22	.....	.....	20.76

## FORT MACKINAC, MICHIGAN—Continued.

*Latitude 45° 51', Longitude 84° 33'. Altitude 728 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1849....	18.98	12.86	23.10	33.30	46.06	58.90	66.93	61.64	50.15	44.10	41.53	20.17	35.82	62.49	45.26	15.50	39.77
1850....	23.66	23.09	25.67	33.92	48.10	61.80	68.00	67.25	58.91	45.22	36.14	19.58	35.90	65.52	46.76	22.11	42.57
1851....	19.47	25.86	30.21	36.26	44.79	57.61	66.75	63.37	58.85	49.55	27.71	16.57	37.08	62.38	45.37	20.47	41.33
1852....	15.80	20.14	24.17	35.73	.....	.....	64.47	65.65	55.18	45.97	32.37	25.46	.....	.....	44.49	20.47	.....
1853....	22.85	17.68	27.12	38.13	46.76	56.00	63.81	65.06	57.22	44.24	33.75	23.66	37.34	61.62	45.07	21.40	41.36
1854....	18.09	15.89	26.40	37.06	47.62	59.96	67.12	62.47	59.72	49.61	33.66	21.41	37.03	63.13	47.66	16.50	41.17
Mean of 24 yrs.)	19.37	17.60	25.68	37.03	47.47	57.31	64.55	64.05	55.08	45.17	34.30	23.12	36.73	61.97	43.85	20.03	40.65

## FORT DEARBORN, CHICAGO, ILLINOIS.

*Latitude 41° 52', Longitude 87° 35'. Altitude 591 feet.*

1832....	.....	.....	.....	.....	.....	.....	71.25	71.95	63.49	54.43	40.10	33.35	.....	.....	52.64	.....	.....
1833....	29.92	27.81	33.59	50.58	60.71	64.25	73.00	70.53	64.55	45.91	40.00	34.29	48.39	69.35	50.15	30.67	49.64
1834....	13.51	35.06	36.94	47.75	55.25	63.54	74.87	71.66	60.53	46.69	40.54	29.79	46.98	70.02	49.27	26.12	48.10
1835....	28.32	14.15	32.27	42.92	55.22	63.71	67.66	65.92	54.76	48.34	34.35	25.03	43.80	65.76	45.81	22.50	44.47
1836....	22.63	21.94	26.41	42.77	54.12	59.18	67.09	62.41	57.20	47.24	34.51	24.37	41.10	62.89	46.32	22.98	43.32
Mean of 24 yrs.)	23.60	24.74	32.30	46.08	56.32	62.67	70.77	68.55	60.10	48.54	37.90	29.37	44.90	67.33	48.85	25.90	46.75

## FORT BRADY, MICHIGAN.

*Latitude 46° 30', Longitude 84° 43'. Altitude 600 feet.*

1823....	22.10	9.47	20.48	39.69	46.96	59.77	68.44	64.17	53.20	42.49	29.72	19.69	35.71	64.13	41.80	17.09	39.63
1824....	19.95	12.65	25.19	39.34	48.54	60.07	64.56	62.57	57.86	42.61	31.35	26.45	37.69	62.50	43.94	19.65	40.95
1825....	18.73	25.62	30.97	41.54	52.55	61.96	67.39	67.99	54.84	45.70	36.77	17.43	41.69	65.73	45.77	20.61	43.46
1826....	17.62	16.53	25.37	32.86	54.03	62.16	.....	.....	.....	45.37	33.44	21.93	37.42	.....	.....	18.63	.....
1827....	17.36	22.73	25.85	39.39	49.92	59.68	63.60	63.57	58.57	45.12	31.15	20.33	38.39	62.28	45.05	20.14	41.46
1828....	18.43	20.33	28.73	39.35	52.50	61.23	67.20	64.86	54.55	45.53	34.50	23.74	40.29	64.43	44.96	20.83	42.63
1829....	16.46	9.83	23.16	38.21	55.20	59.76	.....	.....	.....	47.64	28.81	28.56	38.56	.....	.....	18.28	.....
1830....	13.19	18.67	27.92	46.18	48.48	59.85	71.00	62.38	55.22	49.50	44.03	24.66	40.56	64.23	49.60	18.84	43.48
1831....	15.43	16.86	33.72	39.19	51.56	62.49	65.11	65.75	53.76	46.19	34.97	12.39	41.49	64.45	44.97	14.89	41.45
1832....	13.21	9.55	28.88	40.96	48.55	62.69	69.55	63.13	55.41	49.60	32.50	24.16	39.46	65.12	45.84	17.81	41.93
1833....	17.74	14.01	23.85	40.63	54.15	57.56	62.93	64.36	54.55	39.84	33.05	33.96	39.33	61.62	42.48	21.90	41.34
1834....	14.80	21.24	27.70	40.68	51.59	56.82	67.98	66.38	53.10	40.87	34.54	18.76	39.99	63.73	42.67	18.27	41.16
1835....	21.50	10.06	25.14	38.34	52.37	61.63	64.29	62.49	51.69	43.83	30.55	19.00	38.62	62.51	42.04	16.55	40.08
1836....	17.72	11.83	16.12	33.68	48.73	58.57	62.48	55.69	49.39	37.56	30.49	19.91	32.84	58.91	40.05	16.34	37.08
1837....	13.40	13.61	16.07	30.44	42.96	55.87	57.68	58.55	53.10	40.23	34.53	20.95	29.82	57.87	42.62	15.99	36.45
1838....	16.77	8.23	31.17	30.71	44.90	59.00	67.85	63.20	55.54	41.13	24.05	12.21	35.59	63.35	40.26	12.40	37.90
1839....	16.20	20.73	23.02	45.44	45.85	57.46	66.16	64.33	52.66	48.44	31.33	27.90	38.10	62.95	44.16	21.61	41.71
1840....	15.08	21.59	28.82	38.35	58.37	62.19	64.07	60.00	52.45	40.77	31.44	19.57	41.85	62.10	41.55	18.85	41.09
1841....	16.83	15.46	22.84	33.50	46.23	63.39	61.41	63.43	54.99	41.02	31.73	22.82	34.02	62.74	42.58	18.37	39.43
1842....	18.17	19.49	30.85	39.21	42.14	50.52	58.45	62.93	51.12	43.17	29.07	20.78	37.40	57.30	41.12	19.48	38.52
1843....	21.81	3.69	12.70	35.96	44.60	55.60	67.90	62.93	53.30	38.04	25.25	25.80	31.09	62.14	39.86	17.10	37.55
1844....	10.51	20.42	23.77	42.67	47.95	53.33	61.06	60.17	53.35	39.55	29.32	20.91	35.13	58.21	41.01	17.25	38.66
1845....	17.90	19.75	27.30	35.57	44.52	56.27	61.20	63.77	54.92	45.42	31.50	18.25	35.80	60.41	43.98	18.63	39.70

## FORT BRADY, MICHIGAN—Continued.

*Latitude 46° 30', Longitude 84° 43'. Altitude 600 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring	Summer.	Autumn.	Winter.	Year.
1846....	23.50	17.12	31.70	42.17	52.95	61.72	.....	.....	61.62	44.87	39.72	25.75	42.27	.....	48.74	22.12	.....
1847....	12.40	13.26	19.87	35.03	51.37	55.64	66.99	62.45	54.71	41.25	32.55	22.10	35.42	61.69	43.94	15.92	39.24
1848....	18.53	21.50	25.14	39.11	50.11	.....	.....	.....	.....	.....	.....	.....	38.12	.....	.....	.....	.....
1850....	21.80	21.74	26.92	36.88	47.31	62.64	65.88	64.49	54.46	45.29	37.38	18.66	37.04	64.34	45.71	20.73	41.96
1851....	17.69	21.96	28.64	38.20	44.47	53.46	62.46	61.28	56.32	44.73	26.64	17.29	37.10	59.07	42.57	18.95	39.43
1852....	11.69	14.13	18.03	34.52	48.94	.....	.....	.....	.....	.....	35.65	25.06	33.82	.....	.....	16.96	.....
1853....	21.38	18.20	27.70	38.96	45.97	59.88	62.04	63.14	54.08	40.59	32.51	20.47	38.54	61.69	42.39	20.02	40.66
1854....	11.02	12.95	23.14	40.87	46.36	60.54	65.20	61.27	58.04	44.00	29.76	15.26	36.79	62.34	43.60	13.69	39.04
Mean { 21 y'rs }	17.22	16.20	25.15	38.31	49.34	58.40	64.73	62.90	54.57	43.56	32.50	21.50	37.60	62.01	43.54	18.31	40.37

## FORT WILKINS, MICHIGAN.

*Latitude 47° 30', Longitude 88° 00'. Altitude 620 feet.*

1844....	.....	.....	.....	.....	.....	56.78	63.30	63.10	55.52	41.64	29.54	22.67	.....	61.06	42.00	.....	.....
1845....	21.40	23.70	25.99	36.88	44.80	55.85	63.80	61.24	55.75	44.18	30.81	18.43	35.89	60.80	43.53	21.18	40.24
1846....	25.40	19.09	31.88	39.26	52.03	57.41	.....	.....	.....	.....	.....	.....	40.96	.....	.....	.....	.....
Mean ..	23.40	21.40	28.94	38.07	48.41	56.68	63.55	62.17	55.79	42.91	30.17	20.55	38.47	60.80	42.96	21.78	41.00

## FORT HOWARD, WISCONSIN.

*Latitude 44° 30', Longitude 88° 05'. Altitude 620 feet.*

1822....	13.20	21.40	34.57	41.18	61.15	66.48	72.45	69.59	59.18	43.47	36.32	9.37	45.73	69.51	46.32	14.66	44.05
1823....	19.74	15.17	25.98	42.60	52.23	66.01	71.73	69.09	53.45	42.56	29.91	20.06	40.27	68.94	41.97	15.32	42.38
1824....	24.45	17.95	28.48	42.19	53.53	65.12	73.07	67.92	59.54	42.52	30.50	27.25	41.40	68.70	44.15	23.22	44.37
1825....	18.51	28.15	34.05	47.29	56.93	69.26	79.13	63.56	56.55	48.95	37.25	16.19	46.09	72.32	47.58	20.95	46.73
1826....	19.19	18.85	29.39	39.51	62.35	67.89	70.74	68.24	57.26	50.92	36.29	20.92	43.75	68.96	48.10	19.65	45.16
1827....	16.21	25.10	31.00	43.20	55.61	68.15	72.14	70.17	64.12	46.95	34.19	20.42	43.27	70.15	48.42	20.58	45.60
1828....	18.97	23.48	36.60	41.84	56.79	69.73	69.75	69.69	55.80	48.43	34.60	24.58	45.68	69.72	46.11	22.34	45.81
1829....	18.95	6.83	27.10	40.16	61.21	68.76	68.51	67.45	56.00	49.73	26.51	29.39	42.82	68.24	44.08	18.41	43.89
1830....	14.04	24.47	33.21	51.55	54.53	64.00	75.72	63.77	57.05	54.07	43.04	20.81	46.43	69.50	51.39	19.77	46.77
1831....	9.93	12.71	33.69	40.90	56.51	68.88	72.03	70.04	53.68	46.18	31.21	3.56	43.70	70.32	43.69	8.83	41.63
1832....	16.67	9.27	34.49	47.23	53.95	68.44	71.65	66.51	58.54	.....	.....	.....	45.22	68.87	.....	.....	.....
1833....	21.48	20.12	30.62	47.89	58.74	64.04	72.55	70.40	60.97	42.74	37.27	33.47	45.75	69.00	47.00	25.02	46.69
1834....	11.55	31.30	33.05	46.77	58.48	63.53	75.23	71.19	58.53	46.66	39.93	26.47	46.10	69.98	48.37	23.11	46.89
1835....	25.84	11.78	31.95	43.06	59.93	67.54	69.83	67.32	53.56	47.34	29.18	19.79	45.00	68.60	43.36	19.14	48.88
1836....	20.97	20.60	23.89	41.84	56.86	63.78	69.15	62.67	55.00	40.33	34.63	23.69	43.86	65.20	43.34	21.75	42.79
1837....	24.16	23.44	25.65	38.03	47.95	62.34	67.70	64.72	56.94	45.56	39.66	26.42	37.21	64.92	47.00	24.67	43.35
1838....	21.62	12.54	37.67	39.69	51.03	66.79	71.51	69.82	56.30	42.57	25.84	15.54	42.63	69.37	41.57	16.57	42.53
1839....	24.11	25.12	30.15	52.91	53.93	61.25	71.31	65.28	55.46	54.29	32.07	27.13	45.66	65.95	47.21	25.47	46.67
1840....	16.68	22.67	33.59	46.36	59.54	68.32	63.91	65.53	56.97	45.94	33.00	21.61	46.50	67.61	46.24	19.92	44.82
1849....	.....	.....	.....	.....	.....	.....	.....	.....	.....	44.77	42.17	15.48	.....	.....	.....	.....	.....
1850....	21.79	23.38	28.98	37.83	50.11	66.75	70.87	68.03	56.31	47.33	34.63	17.84	38.97	68.22	46.11	21.69	43.87
1851....	20.15	24.89	33.47	39.96	59.19	62.26	67.32	64.56	61.16	46.11	31.10	17.69	41.20	64.71	46.12	20.91	43.23
Mean { 21 y'rs }	18.93	19.96	31.33	43.43	55.79	66.17	71.49	67.88	57.23	46.54	34.26	20.88	43.72	68.51	46.01	19.91	44.49



## FORT WINNEBAGO, WISCONSIN.

*Latitude 43° 31', Longitude 89° 28'. Altitude 770 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1829....	25.49	9.64	33.77	46.83	64.01	68.40	70.08	70.36	61.11	55.45	31.00	33.75	48.20	69.61	49.19	22.96	47.49
1830*...	17.43	23.20	38.40	57.85	61.97	71.33	58.65	76.20	63.33	60.21	47.62	23.24	52.57	77.08	57.22	22.96	52.46
1831....	18.77	18.94	40.12	49.18	61.44	73.55	74.49	72.46	61.37	51.97	33.85	9.58	50.25	73.50	49.06	14.16	46.74
1832....	24.40	16.52	41.53	53.52	57.40	72.75	76.04	71.33	64.95	55.69	37.62	32.63	50.33	73.39	52.55	24.52	50.32
1833....	29.82	25.31	42.20	54.06	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1834....	.....	.....	.....	.....	.....	.....	.....	.....	59.73	47.95	39.00	22.50	.....	.....	.....	.....	.....
1835....	21.13	7.88	30.83	43.03	58.94	64.10	67.99	64.35	51.18	45.75	27.14	18.62	44.23	65.48	41.36	15.71	41.71
1836....	15.95	17.06	20.49	40.34	56.65	62.06	67.56	61.67	54.33	36.75	31.25	16.93	39.16	63.76	40.78	13.53	39.31
1837....	16.67	19.63	23.30	36.44	50.34	61.73	65.29	64.12	55.77	46.31	35.05	20.77	36.09	64.71	45.71	19.04	41.54
1838....	17.95	6.04	37.89	37.50	49.35	66.57	73.01	68.22	56.49	39.21	21.63	12.93	41.58	69.27	39.11	12.31	40.57
1839....	22.36	22.79	30.47	53.97	54.78	60.57	68.56	64.02	51.22	52.42	23.16	22.33	46.41	61.38	43.93	22.49	44.30
1840....	12.78	22.97	31.52	44.76	58.95	65.38	66.52	64.49	54.45	43.32	30.00	16.45	45.08	65.46	42.76	17.40	42.67
1841....	12.03	15.03	28.98	39.60	55.99	66.27	67.97	63.96	54.50	42.50	31.67	23.49	41.52	66.07	42.89	16.57	41.54
1842....	20.52	21.95	39.70	50.58	52.53	57.76	66.16	65.39	57.63	47.89	26.76	18.31	47.72	63.10	44.49	20.26	43.79
1843....	22.03	8.75	12.33	44.31	53.22	64.26	70.59	67.04	61.83	39.29	29.33	27.24	36.64	67.30	43.67	19.34	41.74
1844....	16.57	24.47	35.02	55.17	.....	63.21	71.10	66.43	59.10	43.69	32.11	20.87	.....	66.91	44.93	20.64	.....
1845....	23.63	27.54	34.96	48.40	57.41	66.57	72.22	69.66	.....	.....	.....	.....	46.92	69.48	.....	.....	.....
Mean 16 yrs.	19.52	18.50	32.60	47.20	56.66	65.63	70.95	67.31	57.83	47.90	32.14	21.33	45.49	67.96	45.96	19.78	44.50

\* The summer months of this year are reported as unprecedentedly hot and dry in Wisconsin.

## FORT CRAWFORD, WISCONSIN.

*Latitude 43° 05', Longitude 91° 00' Altitude 642 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1822....	14.86	23.73	33.01	43.99	60.45	69.25	73.66	72.70	61.16	41.37	34.26	9.53	47.43	71.87	46.60	16.04	45.50
1824....	24.59	20.14	26.96	43.56	53.46	67.90	71.34	70.12	61.34	46.53	41.36	26.56	43.09	69.79	46.74	23.76	45.34
1825....	18.55	30.45	40.96	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1829....	.....	.....	.....	.....	.....	.....	71.00	73.76	63.05	54.31	30.26	31.93	.....	.....	49.37	.....	.....
1830....	20.21	27.84	38.42	56.76	64.10	73.53	81.46	77.07	61.45	55.97	45.90	19.23	53.69	77.35	54.44	22.44	51.33
1831....	9.92	18.90	36.30	47.26	61.90	72.69	76.56	71.93	60.17	52.00	29.54	5.97	43.65	73.73	47.24	11.60	45.30
1832....	18.42	9.96	37.43	54.54	35.92	72.75	74.40	70.06	62.63	52.01	35.18	23.90	49.40	72.40	49.76	19.09	47.66
1833....	27.57	23.94	31.85	58.86	64.92	70.49	73.72	76.57	70.27	43.79	39.47	32.63	52.88	75.26	51.13	23.06	51.34
1834....	7.96	34.16	34.74	57.41	51.07	68.88	80.49	77.55	59.56	43.53	41.99	27.93	47.75	75.64	50.04	23.35	49.19
1835....	26.27	9.47	35.74	46.45	64.57	68.77	73.33	70.25	56.45	49.57	29.74	21.69	43.92	70.95	45.25	19.14	46.06
1836....	17.72	20.03	24.22	45.73	63.91	67.45	72.95	67.26	60.49	41.71	34.33	20.51	44.62	69.22	45.63	19.42	45.53
1837....	18.43	25.54	26.56	42.56	56.71	64.03	73.74	70.97	61.14	50.06	39.66	21.57	42.02	69.60	50.29	21.95	45.96
1838....	22.03	6.92	49.43	45.16	56.63	72.40	78.22	73.95	63.99	45.37	27.45	17.56	43.41	71.36	45.77	15.60	46.16
1839....	27.33	23.33	35.05	61.56	63.44	69.51	73.71	72.05	58.51	59.53	33.55	25.49	53.55	73.42	50.03	27.25	51.46
1840....	16.21	26.46	37.15	51.34	65.97	73.39	73.31	70.50	59.45	47.94	35.63	23.42	51.49	72.57	47.67	22.03	43.44
1841....	16.79	21.73	36.92	44.99	64.78	71.43	71.25	69.16	59.49	47.61	36.37	25.32	43.90	71.61	43.99	21.46	47.74
1842....	20.31	22.71	43.95	59.68	59.64	67.63	73.73	71.13	62.74	53.39	29.14	19.47	54.12	70.35	43.46	20.33	43.64
1843....	20.17	7.70	8.29	45.60	56.22	67.16	74.00	71.10	65.13	49.22	31.27	23.61	36.70	70.75	45.56	18.33	42.96
1844....	17.25	24.70	37.63	57.24	69.68	66.12	74.19	70.00	60.43	46.74	35.79	20.47	51.37	70.10	47.65	20.31	47.61
1845....	24.43	23.06	33.27	52.57	61.01	63.07	75.25	72.63	.....	.....	.....	.....	50.62	71.38	.....	.....	.....
Mean 19 yrs.	19.43	21.67	34.53	50.33	60.53	69.55	75.26	72.03	61.54	43.92	34.56	22.65	43.66	72.23	43.34	21.25	47.63

## FORT ARMSTRONG, ILLINOIS.

*Latitude 41° 30', Longitude 90° 40'. Altitude 528 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1824....	29.58	24.57	32.92	49.17	61.64	70.05	76.47	74.06	64.21	50.47	34.23	29.55	47.91	73.53	49.64	27.90	49.74
1825....	21.59	33.04	42.04	54.35	65.12	74.64	79.91	77.51	65.92	52.04	41.95	22.98	53.84	77.35	53.30	25.87	52.59
1826....	19.26	22.74	37.16	44.95	68.89	74.28	76.41	72.20	63.59	57.52	43.54	26.63	50.33	74.30	54.88	22.88	50.60
1827....	21.75	31.37	40.43	51.18	63.83	72.31	78.38	76.66	67.43	52.26	38.64	27.74	51.81	75.78	52.78	26.95	51.83
1828....	24.28	31.08	35.69	48.25	62.03	75.54	76.85	76.73	60.84	54.29	40.89	33.47	48.66	76.37	52.01	29.61	51.66
1829....	25.75	12.41	32.56	49.73	67.08	74.12	75.10	74.88	62.94	54.78	29.80	34.60	49.79	74.70	49.17	24.25	49.48
1830....	23.45	30.29	41.18	55.90	62.38	72.26	81.36	76.58	62.87	57.00	49.99	26.39	53.15	76.73	56.62	26.69	53.30
1831....	13.10	17.72	38.89	48.56	59.64	70.45	74.34	72.13	59.56	50.90	35.57	9.56	49.03	72.31	48.68	13.46	45.87
1832....	23.35	17.43	41.06	54.92	58.42	73.24	.....	.....	.....	.....	.....	.....	51.47	.....	.....	.....	.....
1833....	31.30	28.12	37.68	55.68	63.30	65.88	74.62	73.24	64.90	43.43	39.97	32.90	52.22	71.25	49.43	30.77	50.92
1834....	12.82	36.17	39.07	54.44	59.70	67.64	76.87	75.38	59.64	48.81	40.89	30.00	51.07	73.30	49.78	26.33	50.12
1835....	27.38	11.28	35.22	45.66	60.10	66.26	71.03	69.84	60.82	53.38	33.75	24.91	46.99	69.04	49.32	21.19	46.63
Mean } 11½ yrs }	22.80	24.68	37.82	51.06	62.70	71.39	76.49	74.47	63.90	52.26	39.02	27.16	50.53	74.12	51.73	24.88	50.31

## FORT ATKINSON, IOWA.

*Latitude 43° 00', Longitude 92° 00'. Altitude 700? feet.*

1842....	18.07	20.76	32.51	54.90	56.94	62.31	70.13	70.76	65.96	55.91	31.80	19.17	51.45	67.73	51.22	19.33	47.43
1843....	21.17	8.39	7.53	44.40	55.08	66.31	72.72	67.17	62.10	38.24	29.90	26.90	35.67	68.73	43.44	18.82	41.66
1844....	14.32	23.61	35.01	55.39	57.32	64.10	73.39	67.40	58.36	43.25	32.23	18.76	49.24	68.30	44.61	18.89	45.26
1845....	22.48	26.59	34.90	49.00	58.67	66.34	73.53	69.35	59.59	45.20	31.02	16.71	47.52	69.74	45.27	21.93	46.11
1846....	29.70	22.35	38.00	45.58	64.21	.....	.....	.....	.....	.....	.....	.....	49.26	.....	.....	.....	.....
Mean..	21.15	20.34	31.59	49.85	58.44	64.76	72.44	68.67	61.50	45.65	31.25	20.38	46.63	68.62	46.13	20.62	45.50

## FORT DES MOINES, IOWA.

*Latitude 41° 32', Longitude 93° 38'. Altitude 780 feet.*

1843....	.....	.....	.....	.....	.....	.....	.....	.....	.....	43.50	34.93	31.50	.....	.....	.....	.....	.....
1844....	21.08	33.97	38.88	59.24	59.33	64.88	76.46	71.61	59.36	45.86	35.70	26.90	52.48	70.98	46.97	27.32	49.44
1845....	28.96	32.08	40.20	52.30	59.11	67.99	76.52	71.86	62.98	.....	.....	.....	50.54	72.12	.....	.....	.....
1846....	32.25	23.90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean..	27.43	29.98	39.54	55.77	59.22	66.43	76.49	71.73	61.17	44.68	35.31	29.20	51.51	71.55	47.05	28.87	49.74

## FORT GAINES, (RIPLEY,) MINNESOTA.

*Latitude 46° 19', Longitude 94° 19'. Altitude 1,130 feet.*

1849....	.....	.....	.....	.....	.....	.....	67.68	64.28	56.83	43.05	37.26	4.94	.....	.....	45.71	.....	.....
1850....	7.94	13.03	20.27	32.54	50.99	63.76	66.21	67.84	54.60	42.85	30.50	6.03	34.60	65.94	42.65	8.99	38.05
1851....	9.25	14.46	31.32	39.82	48.44	60.04	.....	61.61	60.03	43.36	24.33	7.41	39.86	.....	42.57	10.37	.....
1852....	10.08	17.53	21.21	36.55	55.96	63.05	68.00	66.58	53.43	45.01	22.56	9.37	37.90	65.87	40.33	12.33	39.11
1853....	13.61	7.11	22.46	43.85	52.02	62.92	65.70	66.34	56.53	41.45	24.20	15.74	39.44	64.98	40.73	12.15	39.32
1854....	2.10*	10.88	27.26	45.58	52.11	64.01	68.93	61.78	58.59	48.27	29.52	18.19	41.65	64.91	45.46	8.99	40.25
1855....	8.42	8.22	23.69	46.16	57.69	62.90	.....	.....	.....	.....	.....	.....	42.51	.....	.....	.....	.....
Mean } 6 yrs }	7.87	11.87	24.37	40.75	52.87	62.78	67.30	64.74	56.67	44.00	28.06	10.28	39.33	64.94	42.91	10.01	39.30

\* 2.10 degrees below zero.

FORT SNELLING, MINNESOTA.

*Latitude 44° 53', Longitude 93° 10'. Altitude 820 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1819....	.....	.....	.....	.....	.....	.....	.....	.....	.....	44.13	33.04	20.00	.....	.....	.....	.....	.....
1820....	0.92	21.29	26.43	52.72	60.64	70.86	68.86	68.32	62.01	.....	30.71	10.83	46.60	69.35	.....	11.01	.....
1821....	7.38	14.51	29.04	40.63	57.08	74.27	72.26	75.06	59.00	48.72	30.74	10.58	42.25	73.86	46.15	10.82	43.27
1822....	11.68	19.92	37.39	43.75	61.28	70.19	75.47	72.77	60.58	42.56	30.58	3.26	47.47	72.81	44.57	11.62	44.12
1823....	13.16	5.95	29.87	49.26	56.94	73.96	75.85	72.00	56.03	47.12	31.75	13.56	45.36	73.94	44.97	10.89	43.79
1824....	17.17	14.20	23.86	41.78	56.29	66.03	73.03	70.50	61.03	41.92	29.96	22.23	40.31	69.85	44.30	17.87	43.08
1825....	14.84	26.25	36.29	55.19	60.90	70.67	75.54	73.01	62.87	45.98	33.94	14.36	50.79	73.07	47.60	18.48	47.48
1826....	13.09	16.15	29.60	37.68	66.76	72.05	73.85	70.24	55.32	49.13	35.29	19.15	44.68	72.05	46.58	16.13	44.86
1827....	17.26	21.86	31.74	44.76	62.93	71.95	74.06	70.35	61.02	49.26	31.99	13.01	46.48	72.12	47.42	18.38	46.10
1828....	10.42	16.80	32.24	45.04	60.28	71.82	76.40	74.46	58.83	50.12	35.18	24.87	45.85	74.23	48.04	17.36	46.37
1829....	15.97	7.51	29.87	48.03	68.17	73.63	73.57	71.34	57.77	50.46	27.14	25.08	48.69	72.83	45.12	16.19	45.71
1830....	14.18	23.60	34.00	51.77	59.70	70.31	81.66	73.21	58.70	54.74	42.79	15.64	48.49	75.06	52.08	17.81	48.36
1831....	8.84	14.04	32.28	45.13	61.11	70.06	73.81	71.51	54.78	48.28	31.16	3.28	46.17	71.79	44.74	8.72	42.85
1832....	17.16	6.46	38.05	53.97	55.89	66.94	73.72	67.61	60.50	50.67	33.54	25.77	49.30	69.42	48.24	16.46	45.85
1833....	21.19	20.93	34.09	51.76	61.09	67.97	75.17	70.75	62.61	41.43	37.11	31.37	48.98	71.26	47.05	24.50	47.95
1834....	5.63	31.16	32.32	51.67	61.76	67.18	77.75	73.32	56.69	45.82	40.02	21.84	48.58	72.75	47.51	19.54	47.09
1835....	23.49	9.28	32.72	43.99	62.56	68.30	70.65	68.00	54.63	45.69	24.38	17.29	46.42	68.98	41.57	16.69	43.41
1836....	12.42	17.04	20.25	43.67	64.29	67.38	72.12	66.12	56.80	41.94	34.37	19.00	42.74	68.54	44.37	16.15	42.95
1837....	19.47	25.08	24.54	41.33	54.06	64.50	71.32	67.92	58.39	46.53	37.79	17.81	39.98	67.58	47.50	20.79	43.96
1838....	9.74	4.45	37.44	41.78	53.07	70.43	75.64	72.67	61.12	42.72	20.53	11.36	44.10	72.91	41.46	8.52	41.75
1839....	22.49	24.80	29.63	57.28	57.18	67.13	73.89	71.14	56.34	54.40	30.14	22.05	48.03	70.72	46.96	23.11	47.20
1840....	12.43	21.85	34.81	47.50	63.83	69.60	70.47	65.93	56.88	40.92	29.47	24.14	48.71	68.67	42.42	19.47	44.82
1841....	13.82	20.48	33.19	38.15	59.72	69.83	72.32	68.33	54.38	44.80	30.41	19.78	43.69	70.16	43.20	14.69	42.93
1842....	17.80	19.54	39.15	49.83	51.87	56.03	68.40	67.69	58.17	49.29	24.60	18.03	46.95	64.04	44.02	18.46	43.39
1843....	20.70	2.01	4.67	43.55	52.25	62.98	69.90	66.56	57.95	47.72	26.61	23.14	33.49	66.48	44.09	15.28	39.83
1844....	9.41	22.33	32.94	51.45	55.08	62.64	69.82	65.61	55.57	41.45	28.10	17.05	46.49	66.02	41.71	16.26	42.62
1845....	19.49	25.60	34.57	47.62	60.83	67.64	74.19	69.47	59.79	45.64	29.50	14.10	47.67	70.43	44.98	19.73	45.70
1846....	28.81	19.53	38.41	46.37	63.65	66.82	74.21	73.86	62.80	42.87	39.85	21.57	49.48	71.62	48.51	23.30	48.23
1847....	4.24	19.70	23.88	46.18	52.64	65.24	71.90	66.73	57.99	46.66	30.45	16.36	40.90	67.96	45.03	13.43	41.83
1848....	16.94	19.46	28.22	44.79	60.11	67.45	67.00	67.16	53.97	50.19	25.68	8.62	44.37	67.20	43.28	15.01	42.46
1849....	5.42	12.93	30.26	39.69	54.77	68.22	71.63	63.85	61.54	47.23	41.60	8.76	41.91	67.90	50.12	9.04	42.27
1850....	13.84	17.83	24.05	35.43	55.81	70.51	75.85	73.90	61.06	49.22	33.73	12.42	37.76	73.42	48.00	14.69	43.47
1851....	14.95	22.10	39.37	50.14	57.99	67.80	76.34	68.41	69.08	52.05	30.27	11.16	49.17	70.85	50.46	16.07	46.54
1852....	12.82	23.14	26.80	43.07	58.48	70.06	73.68	71.57	54.20	53.13	25.73	11.67	42.78	71.77	44.35	15.88	43.69
1853....	14.03	6.69	23.00	44.97	54.97	67.83	70.60	71.27	60.04	45.60	29.60	18.23	40.98	69.90	45.08	12.98	46.74
1854....	1.30	15.40	30.74	48.54	57.82	70.01	75.04	71.12	61.66	52.10	32.30	20.63	45.70	72.06	48.69	12.45	44.72
1855....	17.09	12.62	25.30	49.86	61.29	66.15	.....	.....	.....	.....	.....	.....	45.48	.....	.....	.....	.....
Mean 35½ yrs.	13.76	17.57	31.41	46.34	58.97	68.46	73.57	70.05	58.86	47.15	31.67	16.89	45.57	70.69	45.89	16.07	44.55



## FORT LEAVENWORTH, KANSAS

*Latitude 39° 21', Longitude 94° 44'. Altitude 896 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1830....	34.18	40.58	48.52	58.87	64.18	74.34	80.71	78.97	67.21	62.51	46.84	26.71	57.19	78.01	58.85	33.52	56.97
1831....	19.51	24.40	46.41	55.14	64.14	70.24	76.60	71.06	62.18	53.51	40.94	18.21	55.23	72.63	52.21	20.71	50.19
1832....	36.85	18.56	46.34	59.48	61.31	72.44	76.53	73.03	68.02	56.49	41.30	35.25	55.71	74.00	55.17	30.22	54.77
1833....	35.66	35.72	40.92	59.12	67.11	71.78	79.08	77.16	68.33	53.02	45.95	37.51	42.38	76.01	55.77	36.30	52.61
1834....	13.51	35.79	40.92	58.89	65.10	72.04	78.04	78.06	61.53	54.23	44.95	30.67	41.23	76.05	53.57	26.66	49.38
1835....	29.50	19.37	40.98	51.46	67.01	78.35	.....	.....	.....	52.65	32.93	31.94	53.15	.....	.....	26.94	.....
1836....	25.62	29.73	33.07	53.98	66.31	68.68	73.94	70.85	64.08	46.63	39.29	27.54	51.12	71.16	50.00	24.30	49.14
1837....	26.34	34.42	36.57	47.21	59.27	71.23	81.46	75.71	64.90	55.76	49.79	36.94	47.68	76.13	56.82	32.57	53.30
1838....	27.73	17.38	46.90	58.04	61.10	74.88	82.34	77.91	68.69	51.00	28.59	24.05	55.35	78.38	49.43	23.05	51.55
1839....	33.84	36.36	48.22	64.06	64.15	70.34	75.57	72.57	61.35	59.78	37.57	27.84	57.14	72.83	52.90	33.35	54.05
1840....	22.80	34.61	42.92	55.79	63.11	70.91	72.35	72.22	60.68	53.72	38.93	33.15	53.94	71.83	51.11	30.19	51.77
1841....	27.73	27.80	42.00	51.47	63.55	72.21	77.60	70.51	59.15	50.54	39.37	31.08	52.34	73.44	49.69	28.87	51.08
1842....	34.98	35.59	53.42	60.56	62.97	67.48	72.89	71.15	66.64	58.02	32.52	25.67	58.98	70.51	52.06	32.08	53.41
1843....	28.96	20.50	17.45	49.76	60.40	70.50	74.46	72.25	67.24	49.04	40.20	36.12	42.54	72.40	52.16	28.53	48.91
1844....	25.88	33.66	40.19	63.46	62.04	68.75	77.47	73.91	63.44	51.46	38.39	32.18	55.23	73.88	51.10	30.57	52.57
1845....	36.05	37.52	41.44	59.55	63.29	70.27	78.70	75.62	69.53	52.96	41.14	26.66	55.76	74.86	54.54	33.61	54.69
1846....	38.22	31.01	46.65	54.92	66.80	68.87	77.85	77.06	69.04	54.36	45.00	33.08	56.12	74.59	56.13	34.10	55.86
1847....	18.16	31.26	34.95	57.90	59.45	69.91	75.83	69.24	65.63	55.70	38.24	30.00	47.43	71.66	53.19	26.47	49.69
1848....	32.96	35.35	40.67	52.70	66.49	69.05	72.34	69.74	.....	.....	.....	.....	53.29	70.38	.....	.....	.....
1849....	18.25	24.78	45.65	53.00	63.45	73.32	74.57	73.32	69.27	52.84	50.31	26.68	54.03	73.74	57.47	23.24	52.12
1850....	29.49	31.34	37.22	45.58	61.51	72.44	76.86	77.93	67.80	55.84	42.19	25.20	48.10	75.74	55.27	28.67	51.94
1851....	32.00	35.16	47.11	50.20	65.25	70.62	75.77	73.37	71.60	54.49	35.25	26.28	54.19	73.25	53.78	31.15	53.09
1852....	24.42	34.82	43.89	50.26	64.68	69.96	74.79	73.42	63.42	58.38	33.51	25.77	52.94	72.72	51.77	28.34	51.44
1853....	32.03	30.53	39.87	54.98	59.97	72.82	72.72	75.71	68.24	53.39	44.18	31.76	51.61	73.75	55.27	31.44	53.02
1854....	24.68	35.53	45.14	56.06	65.45	72.85	81.19	79.10	73.71	60.64	41.37	34.38	55.55	77.71	58.57	31.53	55.84
1855....	28.13	38.23	52.26	60.24	64.61	69.78	77.12	.....	.....	.....	.....	.....	59.04	.....	.....	.....	.....
Mean 24½ yrs.	28.00	31.15	42.22	55.47	63.64	71.31	76.67	74.16	66.16	54.46	40.36	29.77	53.78	74.05	53.66	29.64	52.78

## COUNCIL BLUFFS, NEBRASKA.

*Latitude 41° 30', Longitude 95° 48'. Altitude 1,250 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1820....	8.83	29.38	34.12	58.01	62.72	74.12	75.44	75.08	68.01	46.21	32.87	18.41	51.62	74.88	49.03	18.87	48.60
1821....	10.78	24.14	37.00	45.06	58.59	75.00	72.14	77.76	64.16	54.89	35.94	14.92	46.88	74.97	51.66	16.61	47.53
1822....	21.02	32.87	44.81	49.31	63.92	74.01	79.62	77.27	67.81	49.13	35.34	12.80	52.68	76.97	50.76	22.23	50.66
1823....	22.37	16.07	38.87	55.04	61.82	78.99	79.00	76.70	66.83	55.69	41.44	27.48	51.91	78.23	54.65	21.97	51.69
1824....	27.19	27.46	28.42	47.37	63.34	67.45	75.92	75.15	64.45	51.30	30.07	25.81	46.38	72.84	46.61	26.82	48.66
1825....	20.42	32.91	40.34	59.45	66.98	73.05	75.30	76.66	64.34	54.74	43.05	24.17	55.59	75.00	54.04	25.83	52.61
1843*....	24.90	13.78	12.86	48.63	58.22	68.25	73.77	69.46	63.80	.....	.....	.....	39.90	70.49	.....	.....	.....
Mean 7 yrs.	19.36	25.23	33.77	51.84	62.23	72.98	75.88	75.44	65.63	53.00	36.45	20.60	49.25	74.76	51.36	21.73	49.28

\* The observations in 1843 were at Fort Croghan, Iowa, twenty miles south of Council Bluffs.

FORT KEARNY, NEBRASKA.

*Latitude 40° 38', Longitude 98° 57'. Altitude 2,360 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1849....	7.10	15.77	35.80	46.92	58.24	67.95	70.95	68.92	65.23	46.74	40.94	17.89	47.00	69.27	50.97	13.59	45.20
1850....	22.92	27.28	31.74	39.94	58.90	68.20	71.95	73.00	63.85	41.98	35.31	19.15	43.52	72.05	47.04	23.11	46.43
1851....	27.09	28.11	.....	45.58	60.63	67.00	76.17	70.82	69.58	50.45	30.38	19.69	.....	71.33	59.14	24.93	.....
1852....	23.07	30.93	33.34	43.30	60.09	67.80	72.62	72.01	58.77	53.35	26.17	15.07	45.57	70.81	46.10	23.02	46.38
1853....	26.08	24.61	36.50	48.56	53.59	70.26	71.52	73.15	63.00	48.94	34.16	29.26	46.92	71.64	48.70	26.65	46.30
1854....	18.26	30.37	36.76	51.22	59.31	68.92	75.16	76.10	66.10	55.91	37.44	30.15	49.10	73.39	53.15	26.26	50.47
1855....	23.55	25.69	32.86	54.39	60.89	69.44	.....	.....	.....	.....	.....	.....	49.38	.....	.....	.....	.....
Mean { 6½ yrs. }	21.14	26.11	34.50	47.13	58.81	68.51	73.56	72.33	64.42	49.56	34.07	21.87	46.81	71.47	49.35	23.04	47.67

FORT LARAMIE, NEBRASKA.

*Latitude 42° 12', Longitude 104° 31'. Altitude 4,519 feet.*

1849....	.....	.....	.....	.....	.....	.....	.....	.....	61.98	43.50	37.28	23.92	.....	.....	47.59	.....	.....
1850....	27.35	36.27	35.50	43.25	56.04	66.91	72.87	73.51	67.13	54.58	35.05	26.62	44.93	71.10	52.25	30.08	49.59
1851....	35.57	31.21	41.00	47.45	55.15	67.21	77.38	72.69	69.32	51.56	33.24	24.74	47.86	72.43	51.37	30.50	50.54
1852....	30.68	33.02	30.00	42.80	57.11	67.18	75.05	73.10	58.77	49.56	25.23	19.92	43.30	71.78	44.52	27.87	46.87
1853....	34.11	29.71	36.92	48.57	51.62	65.59	72.97	73.14	61.11	49.67	41.73	33.72	45.70	70.57	50.84	32.51	49.90
1854....	22.60	36.40	41.05	50.62	56.92	67.73	75.24	76.46	66.95	56.59	42.44	38.94	49.53	73.14	55.33	32.65	52.66
1855....	35.85	29.01	36.41	52.94	59.82	69.44	.....	.....	.....	.....	.....	.....	49.72	.....	.....	.....	.....
Mean { 6 yrs. }	31.03	32.60	36.81	47.60	56.11	67.34	74.70	73.78	64.21	50.91	35.83	27.98	46.84	71.94	50.32	31.14	50.06

FORT ARBUCKLE, INDIAN TERRITORY.

*Latitude 34° 27', Longitude 97° 09'. Altitude 1,000? feet.*

1850....	.....	.....	.....	.....	.....	.....	.....	.....	60.68	52.92	34.15	.....	.....	.....	.....	.....	.....
1851....	39.28	43.11	54.62	56.96	69.11	78.03	81.83	84.55	77.13	62.80	45.56	39.47	60.23	81.47	61.83	40.62	61.04
1852....	36.77	47.07	53.76	59.77	70.25	73.71	78.26	78.04	69.05	63.11	45.10	38.82	61.26	76.67	59.09	40.89	59.48
1853....	41.33	40.68	51.24	64.26	66.25	77.35	79.50	81.81	74.51	60.77	52.91	42.44	60.58	79.55	62.73	41.48	61.08
1854....	36.16	47.75	57.39	60.82	68.64	74.96	83.29	83.95	77.28	66.35	49.91	42.90	62.28	80.73	64.51	41.94	62.37
1855....	41.94	39.86	49.09	67.43	75.39	77.61	85.67	.....	.....	.....	.....	.....	67.30	.....	.....	.....	.....
Mean...	39.10	43.69	53.22	61.85	69.93	72.33	81.71	82.09	74.49	62.74	49.28	39.56	61.67	78.71	62.17	40.78	60.83

FORT BELKNAP, TEXAS.

*Latitude 33° 08', Longitude 98° 48'. Altitude 1,600? feet.*

1851....	.....	.....	.....	.....	.....	83.31	84.70	79.93	66.20	46.64	41.93	.....	.....	64.26	.....	.....	.....
1852....	39.40	49.77	56.26	60.08	71.15	75.88	80.58	79.95	71.48	66.15	49.55	44.11	62.49	78.80	62.39	44.43	62.03
1853....	44.86	43.28	54.51	67.31	68.41	78.12	81.72	84.59	79.29	65.29	55.45	46.07	63.41	81.48	66.68	44.74	64.08
1854....	41.01	52.33	63.15	65.77	71.66	78.79	83.86	80.75	78.71	69.62	53.59	46.53	66.86	81.13	67.31	46.62	65.48
1855....	45.92	44.49	53.69	70.00	76.80	79.12	.....	.....	.....	.....	.....	.....	66.83	.....	.....	.....	.....
Mean...	42.80	47.47	56.90	65.79	72.00	77.98	82.37	82.50	77.33	66.81	51.31	44.65	64.90	80.95	65.15	44.98	63.99

## FORT WORTH, TEXAS.

*Latitude 32° 40', Longitude 97° 25'. Altitude 1,100? feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1849....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	59.46	44.24	.....	.....	.....	.....	.....
1850....	49.96	50.61	55.63	61.96	67.98	77.63	81.76	85.70	79.69	66.82	53.67	38.87	61.82	81.69	66.06	46.48	64.01
1851....	45.78	46.71	56.64	61.10	72.70	79.29	82.23	84.55	78.66	66.23	48.80	44.12	63.48	82.02	64.56	45.33	63.90
1852....	40.88	51.42	58.49	61.49	73.79	76.83	81.73	79.62	71.27	65.61	51.52	46.30	64.59	79.39	62.80	46.20	63.25
1853....	45.70	46.39	54.44	65.71	67.47	76.02	78.24	81.61	.....	.....	.....	.....	62.54	78.62	.....	.....	.....
Mean..	43.58	48.78	56.30	62.56	70.48	77.44	80.99	82.87	76.54	66.22	53.36	43.38	63.11	80.43	65.37	45.25	63.54

## PHANTOM HILL, CLEAR FORK OF BRAZOS, TEXAS.

*Latitude 32° 30', Longitude 99° 45'. Altitude 2,300? feet.*

1851....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	46.09	.....	.....	.....	.....	.....
1852....	42.33	51.10	56.50	63.68	74.74	75.96	80.47	79.70	72.04	64.16	50.28	46.10	64.97	78.71	62.16	44.88	62.67
1853....	45.98	46.39	55.46	69.11	69.12	76.97	81.00	83.29	76.82	63.02	56.24	46.60	64.56	80.42	65.36	46.32	64.16
1854....	40.44	50.43	62.11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean..	42.92	49.31	58.02	66.39	71.93	76.46	80.73	81.49	74.43	63.59	53.26	46.26	65.45	79.56	63.76	46.16	63.73

## FORT CHADBOURNE, TEXAS.

*Latitude 32° 02', Longitude 100° 05'. Altitude 2,120 feet.*

1852....	.....	.....	.....	.....	67.81	73.57	79.15	77.91	69.44	63.07	50.29	47.64	.....	76.87	60.93	.....	.....
1853....	45.25	47.44	53.78	64.88	65.32	70.52	75.92	75.08	70.49	54.71	54.24	46.61	61.33	73.84	59.81	46.43	60.35
1854....	38.73	46.94	63.58	63.17	70.06	74.00	78.54	82.94	76.01	69.57	55.13	45.72	65.61	78.49	66.90	43.80	63.70
1855....	48.89	45.87	56.68	68.51	74.84	77.06	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean..	44.29	46.75	58.01	65.52	69.51	73.79	77.87	78.64	71.98	62.45	53.22	46.62	64.35	76.77	62.55	45.87	62.38

## FORT GRAHAM, TEXAS.

*Latitude 31° 56', Longitude 97° 26'. Altitude 900? feet.*

1850....	.....	.....	57.84	62.28	68.45	78.84	83.90	85.07	78.43	66.62	55.94	40.35	62.84	82.60	66.99	.....	.....
1851....	48.27	49.92	58.38	62.69	74.92	81.45	84.90	87.20	80.15	68.37	53.89	48.26	65.33	84.51	67.47	48.82	66.53
1852....	44.01	55.02	58.98	64.29	74.97	77.76	84.39	82.01	73.80	67.93	56.65	50.84	66.08	81.39	66.13	49.96	65.89
1853....	51.58	51.49	57.16	67.00	72.02	79.75	79.35	84.53	.....	.....	.....	.....	65.06	81.21	.....	.....	.....
Mean..	47.95	51.81	58.09	64.31	72.59	79.45	83.13	84.70	77.46	67.64	55.49	46.48	64.99	82.43	66.86	48.75	65.76

## FORT GATES, TEXAS.

*Latitude 31° 26', Longitude 97° 49'. Altitude 1,000? feet.*

1849....	.....	.....	.....	.....	.....	.....	.....	.....	.....	67.25	65.37	49.39	.....	.....	.....	.....	.....
1850....	56.21	54.35	59.97	64.59	68.58	76.28	80.80	82.51	78.26	68.51	54.72	40.17	61.03	79.86	67.16	50.21	65.32
1851....	47.84	47.45	58.39	62.75	74.49	81.59	85.04	87.68	80.10	66.00	50.82	47.66	65.21	81.77	65.64	47.65	65.82
Mean..	52.02	50.90	59.18	63.67	71.53	78.93	82.92	85.09	79.18	67.25	56.97	45.81	64.79	82.31	67.80	49.58	66.12



FORT CROGHAN, TEXAS.

*Latitude 30° 40', Longitude 98° 31'. Altitude 1,000? feet.*

	Jan.	Feb.	March	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1849....	.....	.....	.....	.....	.....	78.75	80.90	81.19	76.57	65.57	60.27	44.56	.....	80.28	67.47	.....	.....
1850....	54.14	53.66	62.33	63.73	63.55	74.35	79.62	83.46	80.50	70.58	56.94	43.41	63.20	79.14	69.34	50.40	65.52
1851....	51.30	52.34	60.01	63.72	75.52	81.70	83.42	85.65	78.38	64.90	50.22	47.13	66.42	83.92	64.50	50.22	66.26
1852....	42.89	55.03	62.13	66.67	75.70	78.56	81.31	82.27	74.66	68.14	56.98	52.44	68.16	80.71	66.59	50.12	66.40
1853....	48.95	47.82	57.06	68.50	71.40	78.35	80.03	79.22	.....	.....	.....	.....	62.32	79.20	.....	.....	.....
Mean...	49.29	52.21	60.38	65.65	71.54	78.34	81.06	82.56	77.53	67.30	56.10	46.88	65.86	80.65	66.98	49.46	65.74

FORTS MARTIN SCOTT, MASON, TERRETT, AND MCKAVETT, TEXAS.

1849....	.....	.....	.....	.....	.....	.....	.....	74.79	70.57	60.05	55.66	.....	.....	.....	62.09	.....	.....
1850....	54.15	52.39	57.10	62.87	65.92	73.45	75.67	78.86	73.53	62.05	51.47	39.18	61.96	75.99	62.35	48.57	62.21
1851....	42.93	47.76	54.10	62.08	71.09	77.51	78.84	80.76	74.74	64.02	50.10	47.01	62.42	79.04	62.95	45.91	62.58
1852....	41.44	57.20	61.63	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean Ft. M. S.	46.18	52.45	57.61	62.47	68.50	75.48	77.20	78.14	72.95	63.04	52.41	43.09	62.86	76.94	62.80	47.24	62.46
M. 1852	.....	.....	.....	72.42	77.66	75.74	77.62	80.70	73.15	68.27	54.32	49.37	.....	78.02	65.25	.....	.....
M. 1853	46.57	47.45	56.84	69.35	71.30	76.96	79.33	80.60	76.69	65.57	58.16	.....	65.83	79.03	66.81	.....	.....
T. 1852	.....	.....	.....	65.25	75.85	77.96	80.04	80.53	73.19	66.51	53.90	48.59	.....	79.51	64.53	.....	.....
T. 1853	44.43	45.98	56.91	67.45	69.80	73.97	76.37	77.10	73.52	63.66	58.57	50.59	61.72	75.81	65.25	47.00	63.20
Mc. 1852	.....	.....	.....	67.16	76.13	75.72	79.07	79.66	71.19	64.29	53.09	47.82	.....	78.15	62.86	.....	.....
Mc. 1853	44.62	44.58	56.02	66.75	68.58	73.36	77.56	78.76	.....	.....	.....	.....	63.78	76.56	.....	.....	.....
Mc. 1854	42.89	51.52	62.30	64.04	70.33	76.80	78.74	80.10	75.57	67.50	54.19	43.66	65.62	78.55	65.75	46.02	63.98
Mc. 1855	46.74	44.51	53.66	67.05	73.61	73.84	.....	.....	.....	.....	.....	.....	64.77	.....	.....	.....	.....
Mean Ft. McK.	44.55	46.87	57.39	66.25	72.16	74.93	78.46	79.51	73.38	65.89	53.64	45.74	65.27	77.63	64.30	45.79	63.25

*Fort Martin Scott*—Latitude 30° 10', longitude 99° 05'; altitude 1,300 feet. *Fort Mason*—Latitude 30° 48', longitude 99° 15'; altitude 1,200? feet. *Fort Terrett*—Latitude 30° 23', longitude 100° 16'; altitude 1,320 feet. *Fort McKavett*—Latitude 30° 55', longitude 100° 05'; altitude 2,060 feet.

SAN ANTONIO, TEXAS.

*Latitude 29° 25', Longitude 98° 25'. Altitude 600 feet.*

1849....	.....	.....	.....	.....	.....	.....	80.43	79.34	78.94	71.90	65.59	53.66	.....	.....	72.14	.....	.....
1850....	57.28	56.78	62.53	69.35	72.55	80.61	84.75	85.88	83.06	73.27	63.63	47.67	74.67	83.74	73.32	53.91	71.41
1851....	54.51	53.66	60.83	66.06	74.76	78.88	79.16	83.96	77.85	71.00	56.28	51.51	67.22	80.67	68.38	53.32	67.37
1852....	47.58	62.19	66.22	72.90	81.88	82.07	83.74	86.41	79.29	72.54	.....	.....	73.66	84.07	.....	.....	.....
Mean...	53.26	57.54	63.19	69.44	76.40	80.52	82.03	83.92	79.78	72.18	61.83	50.95	69.68	82.16	71.26	53.92	69.25

## FORT MERRILL, TEXAS.

*Latitude 28° 17', Longitude 98° 00'. Altitude 150? feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1851....	.....	.....	.....	69.57	77.34	82.30	81.82	84.95	78.70	72.00	59.64	59.50	.....	83.02	70.11	.....	.....
1852....	.....	.....	.....	72.46	79.67	80.30	81.85	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1853....	.....	.....	.....	.....	.....	.....	.....	83.96	79.96	75.18	66.26	58.66	.....	.....	73.80	.....	.....
1854....	55.14	59.56	75.50	76.54	80.73	84.82	85.91	84.39	81.09	75.00	61.76	52.17	77.50	85.04	72.62	55.66	72.73
1855....	54.51	54.65	61.82	74.50	81.13	80.11	.....	.....	.....	.....	.....	.....	72.48	.....	.....	.....	.....
Mean...	54.82	57.20	68.66	73.27	79.72	81.88	83.19	84.43	79.92	74.06	62.55	56.78	73.68	83.17	72.18	56.27	71.37

## FORT EWELL, TEXAS.

*Latitude 28° 05', Longitude 98° 57'. Altitude 200? feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1852....	.....	.....	.....	.....	.....	.....	.....	79.54	73.38	65.13	58.71	.....	.....	72.68	.....	.....	.....
1853....	55.37	57.10	63.87	75.61	79.38	83.80	86.52	84.47	80.79	71.49	64.41	55.08	72.95	84.93	72.23	55.85	71.49
1854....	50.47	58.12	70.34	72.50	77.45	81.61	82.22	83.22	81.38	.....	.....	.....	73.43	82.35	.....	.....	.....
Mean...	52.92	57.61	67.00	74.05	78.41	82.70	84.37	83.84	80.57	72.43	64.77	56.89	73.15	83.64	72.59	55.81	71.30

## CORPUS CHRISTI, TEXAS.

*Latitude 27° 47', Longitude 97° 27'. Altitude 20 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1845....	.....	.....	.....	.....	.....	.....	.....	.....	.....	62.22	51.92	.....	.....	.....	.....	.....	.....
1846....	56.30	56.98	63.21	68.50	77.29	80.10	82.22	82.04	81.15	73.69	.....	.....	69.66	81.45	.....	.....	.....
1849....	.....	.....	.....	.....	.....	.....	81.25	81.11	81.01	74.36	72.24	62.21	.....	.....	75.87	.....	.....
1851....	.....	.....	69.38	71.23	79.86	82.62	82.96	84.74	80.38	72.12	60.21	56.50	73.69	83.44	71.23	.....	.....
1854....	.....	.....	.....	.....	76.61	83.27	83.40	84.61	81.62	.....	.....	.....	.....	83.43	.....	.....	.....
Mean...	56.30	56.98	66.59	69.86	77.89	82.00	82.46	83.12	81.04	73.39	64.89	56.88	71.45	82.53	73.11	56.72	70.95

The observations in 1849 were at Point Isabel, south of Corpus Christi.

## FORT BROWN, TEXAS, (MATAMOROS.)

*Latitude 25° 53' 16.3", Longitude 97° 26' 22.5". Altitude 50 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1846....	.....	.....	.....	.....	.....	.....	.....	.....	.....	75.36	72.81	.....	.....	.....	.....	.....	.....
1847....	58.51	64.14	67.66	77.29	82.38	84.79	85.43	84.56	80.88	76.32	70.25	61.37	75.78	84.93	75.82	61.34	74.47
1848....	65.43	66.17	69.61	72.03	81.22	.....	.....	.....	.....	.....	.....	.....	74.29	.....	.....	.....	.....
1849....	.....	.....	.....	.....	.....	.....	.....	.....	78.97	71.01	68.97	62.22	.....	.....	72.98	.....	.....
1850....	62.49	66.03	70.61	73.24	74.31	80.43	84.87	81.76	81.74	76.26	67.26	58.22	73.32	83.32	76.08	62.24	73.49
1851....	60.54	65.21	66.69	75.18	81.60	83.11	82.41	85.83	79.83	73.23	61.89	57.94	71.49	83.45	72.65	61.23	72.55
1852....	55.48	69.77	71.04	75.81	80.40	81.14	82.51	83.05	80.30	77.69	69.68	65.57	75.78	82.23	75.69	63.61	74.31
1853....	56.35	59.84	69.94	78.73	78.97	82.06	84.45	82.76	78.91	71.11	69.37	62.26	75.88	83.09	73.13	59.48	72.89
1854....	59.34	62.45	71.87	73.90	81.00	83.67	84.06	82.00	81.06	76.44	70.35	60.73	75.59	83.24	75.95	60.91	73.92
1855....	60.23	61.60	66.24	74.98	81.77	81.05	.....	.....	.....	.....	.....	.....	73.25	.....	.....	.....	.....
Mean...	59.80	64.40	69.21	75.14	80.21	82.32	83.95	83.83	80.67	74.49	69.14	62.64	74.85	83.37	74.77	62.28	73.82

NOTE.—The observations are reported as from Matamoros for most of the period previous to 1849, though generally taken at positions on the north side of the river.

RINGGOLD BARRACKS, TEXAS.

*Latitude 26° 22' 30.5", Longitude 98° 46' 37.93". Altitude 521 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1849....	.....	.....	.....	.....	.....	.....	.....	.....	.....	72.97	69.85	61.09	.....	.....	.....	.....	.....
1850....	65.48	65.57	70.95	76.92	76.97	85.17	88.94	89.06	83.08	77.08	66.60	55.65	74.64	87.72	75.58	62.23	75.54
1851....	59.68	63.04	72.50	77.55	83.80	86.39	84.33	87.07	80.58	75.01	63.19	59.36	77.62	85.93	78.59	60.69	75.71
1852....	52.77	69.84	73.50	77.67	83.41	83.60	85.69	87.00	81.68	75.47	68.97	62.92	78.19	85.43	75.37	61.84	75.21
1853....	57.32	60.59	67.43	77.59	82.07	83.80	87.32	84.50	80.62	73.28	69.34	61.03	75.86	85.21	74.41	59.65	73.78
1854....	55.72	62.38	74.10	76.39	81.74	84.30	82.65	83.01	81.31	75.98	65.42	56.44	77.41	83.32	74.24	58.18	73.29
1855....	59.38	59.03	65.54	76.21	83.51	...	82.15	.....	.....	.....	.....	.....	75.09	.....	.....	.....	.....
Mean } 6 yrs. }	58.39	63.41	70.67	77.05	82.00	84.65	85.18	86.13	81.45	74.96	67.23	59.41	76.57	85.32	74.54	60.40	74.21

FORT McINTOSH, LAREDO, TEXAS.

*Latitude 27° 30' 08", Longitude 99° 29' 07". Altitude 806 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1849....	.....	.....	.....	.....	.....	.....	86.38	84.60	80.76	71.19	66.11	56.65	.....	.....	72.68	.....	.....
1850....	60.78	61.85	68.62	74.04	76.42	82.23	86.09	90.12	86.64	75.73	62.85	50.80	73.02	86.68	75.07	57.47	73.06
1851....	57.67	61.17	67.92	74.81	82.92	86.02	86.41	90.32	82.46	73.24	60.23	55.14	75.22	87.58	71.98	57.99	73.19
1852....	50.59	67.72	71.54	77.58	84.52	84.67	87.36	89.61	82.16	75.15	66.62	59.58	77.88	87.21	74.64	59.29	74.76
1853....	55.18	56.97	66.36	78.24	81.73	84.26	87.71	85.72	82.39	72.92	67.98	57.71	75.44	85.90	74.43	56.62	73.10
1854....	53.02	60.02	74.23	77.19	81.41	83.69	84.06	84.50	81.16	77.19	64.33	53.80	77.61	84.08	74.23	55.61	72.88
1855....	56.63	57.30	65.29	78.08	84.20	82.73	.....	.....	.....	.....	.....	.....	75.86	.....	.....	.....	.....
Mean } 6 yrs. }	55.64	60.84	68.99	76.66	81.87	83.93	86.33	87.48	82.59	74.24	64.69	55.61	75.84	85.91	73.84	57.36	73.24

FORT DUNCAN, EAGLE PASS, TEXAS.

*Latitude 28° 42' 43.7", Longitude 100° 30' 26.7" Altitude 1,460 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1849....	.....	.....	.....	.....	.....	.....	.....	.....	.....	68.55	62.71	53.89	.....	.....	.....	.....	.....
1850....	58.63	58.74	66.19	69.97	75.44	80.78	83.44	86.49	84.38	74.70	63.49	50.22	70.46	83.57	74.19	55.86	71.02
1851....	55.58	57.88	65.01	74.15	81.33	85.39	86.07	88.25	83.76	74.62	62.15	53.57	73.49	86.57	73.51	55.68	72.31
1852....	47.96	63.03	66.62	74.42	82.76	84.80	85.67	88.17	80.71	72.61	58.80	54.45	77.80	86.21	70.71	55.81	72.63
1853....	49.47	52.95	62.85	74.67	79.86	81.20	84.65	81.79	80.67	69.64	62.98	51.80	72.46	82.55	71.10	51.41	69.38
1854....	50.25	58.20	68.67	72.18	78.92	81.87	83.52	84.98	81.74	75.75	61.02	50.14	73.26	83.46	72.84	52.86	70.60
1855....	50.51	53.25	61.24	75.26	80.00	.....	.....	.....	.....	.....	.....	.....	72.17	.....	.....	.....	.....
Mean } 6 yrs. }	52.07	57.34	65.10	73.44	79.72	82.81	84.67	85.96	82.25	72.64	61.86	52.34	72.75	84.48	72.25	53.92	70.85

FORT INGE, TEXAS.

*Latitude 29° 10' 18.4", Longitude 99° 47' 10". Altitude 845 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1849....	.....	.....	.....	.....	.....	.....	.....	.....	78.45	66.20	60.22	52.81	.....	.....	.....	.....	.....
1850....	54.91	55.87	61.86	63.11	70.98	78.42	81.87	83.60	81.91	68.02	61.14	45.81	64.98	81.26	70.39	52.19	67.20
1851....	.....	57.11	62.18	67.25	78.90	81.38	81.70	83.13	78.40	68.00	55.00	53.04	69.44	82.07	67.13	.....	.....
1852....	44.59	60.32	62.96	68.84	76.95	77.45	79.77	81.69	75.30	68.32	57.57	52.79	69.58	79.63	67.06	52.57	67.21
1853....	48.37	52.38	60.00	70.38	75.12	77.84	81.27	80.68	77.53	66.76	60.75	54.00	68.50	79.93	68.35	51.58	67.09
1854....	47.24	56.04	67.54	64.06	71.29	81.91	83.03	83.95	80.71	73.95	60.29	50.34	68.83	82.96	71.65	51.21	68.66
1855....	52.21	50.63	61.22	74.48	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean } 6 yrs. }	49.46	55.39	62.63	68.02	75.37	79.40	81.53	82.61	78.72	68.54	59.16	51.46	68.67	81.18	68.81	52.10	67.69



## FORT LINCOLN, TEXAS.

*Latitude 29° 22', Longitude 99° 33'. Altitude 900? feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1849....	.....	.....	.....	.....	.....	.....	.....	80.61	78.03	65.93	.....	53.67	.....	.....	.....	.....	.....
1850....	57.00	56.53	62.32	64.39	68.85	76.77	81.47	82.52	81.65	77.15	.....	.....	65.19	80.25	.....	.....	.....
1851....	.....	.....	.....	.....	.....	.....	81.98	84.43	79.61	66.92	55.64	53.92	.....	.....	67.39	.....	.....
1852....	46.53	61.52	64.32	69.23	77.60	79.88	83.37	.....	.....	.....	.....	.....	70.38	.....	.....	.....	.....
Mean...	51.74	59.02	63.32	66.81	73.22	78.32	82.27	82.52	79.76	70.00	55.64	53.79	67.78	81.04	68.47	54.85	68.03

## FORT CLARK, TEXAS.

*Latitude 29° 17', Longitude 100° 25'. Altitude 1,000? feet.*

1852....	.....	.....	.....	.....	.....	.....	.....	80.51	74.80	68.46	58.38	53.21	.....	.....	67.18	.....	.....
1853....	49.16	50.77	56.89	70.09	73.85	77.18	79.96	78.74	76.45	66.22	62.23	52.92	66.94	78.63	68.30	50.95	66.20
1854....	48.41	55.01	66.37	68.72	75.00	79.81	81.97	83.93	80.45	73.32	60.32	51.70	70.03	81.90	71.36	51.71	68.75
1855....	44.06	42.36	61.11	71.72	78.13	80.45	.....	.....	.....	.....	.....	.....	70.35	.....	.....	.....	.....
Mean { 3 yrs. }	47.21	49.38	61.46	70.18	75.66	79.15	80.96	81.06	77.23	69.33	60.31	52.61	69.10	80.39	68.96	49.73	67.04

## FORT FILLMORE, NEW MEXICO.

*Latitude 32° 13' 38.5", Longitude 106° 15'. Altitude 3,937 feet.*

1851....	.....	.....	.....	.....	.....	.....	.....	.....	79.60	63.18	48.17	44.11	.....	.....	63.98	.....	.....
1852....	39.69	49.73	48.43	56.53	68.67	78.05	79.59	76.42	74.27	59.03	46.00	44.11	57.87	78.01	59.77	44.51	60.04
1853....	41.71	44.98	52.66	65.54	72.50	81.84	85.36	81.39	77.53	65.00	57.48	50.82	63.53	82.86	66.67	45.84	61.72
1854....	48.62	50.41	59.71	66.10	68.59	80.61	85.12	81.24	77.43	70.37	53.23	46.73	64.80	82.32	67.00	48.59	65.68
1855....	47.88	50.62	61.03	69.39	75.51	83.19	.....	.....	.....	.....	.....	.....	68.64	.....	.....	.....	.....
Mean..	44.47	48.93	55.46	64.39	71.32	80.92	83.36	79.68	77.21	64.39	51.22	46.45	63.72	81.32	64.27	46.62	63.98

## FORT WEBSTER, NEW MEXICO.

*Latitude 32° 47' 53", Longitude 108° 04' 39". Altitude 6,350 feet.*

1852....	.....	40.31	44.54	49.02	57.12	68.97	73.53	67.70	61.48	52.11	38.11	40.63	50.23	70.07	50.57	.....	.....
1853....	40.59	40.64	47.87	57.18	61.75	71.25	76.76	72.08	64.68	55.59	49.12	45.02	55.61	73.36	56.40	42.08	56.86
T. 1854.	41.81	40.57	50.73	60.42	67.06	72.37	78.27	73.92	69.95	60.13	44.30	41.05	59.40	74.85	58.13	41.14	58.38
T. 1855.	39.44	47.65	54.86	65.01	71.81	.....	.....	.....	.....	.....	.....	.....	63.89	.....	.....	.....	.....
Mean...	40.59	40.47	46.21	53.08	59.43	70.11	75.14	69.69	63.08	53.75	43.61	42.82	52.90	71.71	53.48	41.29	54.84

The observations in continuation of this record for 1854 and 1855 were at *Fort Thorn*, latitude 32° 38', longitude 107° 10'; altitude 4,500 feet. They are not included in the mean.

FORT CONRAD, NEW MEXICO.

*Latitude 33° 34', Longitude 107° 09'. Altitude 4,576 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1851....	.....	.....	.....	.....	.....	.....	.....	.....	.....	60.92	41.26	36.65	.....	.....	.....	.....	.....
1852....	32.27	45.11	53.31	58.05	66.65	73.06	78.36	78.15	86.62	56.45	42.87	40.18	59.67	76.52	61.98	39.52	59.42
1853....	38.68	39.78	50.53	63.68	66.76	75.35	79.76	75.92	71.36	57.29	46.66	38.37	60.32	77.01	58.44	38.94	58.68
1854....	36.82	41.08	50.08	60.78	63.56	75.51	82.14	78.85	72.80	64.90	47.53	38.90	58.14	78.83	61.74	38.93	59.41
1855....	40.54	46.04	55.19	63.67	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean...	37.08	43.00	52.28	61.54	65.66	74.64	80.09	77.64	76.93	59.89	45.58	38.52	59.83	77.46	60.80	39.53	59.40

From April, 1854, the observations were at *Fort Craig*, eight miles south of Fort Conrad.

ALBUQUERQUE, NEW MEXICO.

*Latitude 35° 06', Longitude 106° 38'. Altitude 5,032 feet.*

1849....	.....	.....	.....	.....	.....	.....	.....	.....	69.09	56.95	48.32	38.22	.....	.....	58.12	.....	.....
1850....	35.20	40.50	46.20	50.20	61.02	70.76	75.90	74.44	68.07	55.52	40.81	25.96	52.47	73.70	54.80	33.89	53.57
1851....	30.70	36.07	47.26	53.01	61.80	70.19	75.72	.....	.....	.....	.....	.....	54.02	.....	.....	.....	.....
1852....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	42.92	38.43	.....	.....	.....	.....	.....
1853....	41.97	40.25	46.42	59.24	65.10	73.43	78.58	.....	70.86	58.80	47.88	41.09	56.92	.....	59.18	41.00	.....
1854....	35.46	40.70	49.35	59.02	62.47	73.83	78.87	76.39	69.42	62.64	40.66	36.48	56.95	76.36	57.57	47.88	59.69
1855....	34.57	40.61	50.45	59.69	67.30	.....	.....	.....	.....	.....	.....	.....	59.15	.....	.....	.....	.....
Mean...	35.78	39.63	47.94	56.23	63.54	72.05	77.27	75.41	69.38	58.48	44.12	36.04	55.90	74.91	57.33	37.15	56.32

CEBOLLETA AND LAGUNA, NEW MEXICO.

*Latitude 35° 03', Longitude 107° 14'. Altitude 6,000 feet.*

1849....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35.43	.....	.....	.....	.....	.....
1850....	34.80	40.08	45.25	49.82	59.05	68.85	76.33	76.90	70.31	59.06	41.03	25.54	51.37	74.03	56.80	33.47	53.92
1851....	31.00	31.77	43.76	52.90	64.25	76.19	78.56	74.41	66.60	57.43	46.38	40.10	53.64	76.38	54.83	34.29	54.78
1852....	38.91	46.24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean...	34.90	39.36	44.50	51.36	61.65	72.52	77.44	75.65	68.45	58.24	43.70	33.69	52.50	75.20	56.80	35.98	55.12

The position here given is that of *Laguna*. *Cebolleta* is twenty miles northward, and a little more elevated. The record was at this last place until October, 1851.

SANTA FE, NEW MEXICO.

*Latitude 35° 41', Longitude 106° 02'. Altitude 6,846 feet.*

1849....	32.87	35.14	43.18	52.96	54.70	71.33	.....	70.22	64.37	48.90	39.59	33.46	50.28	.....	50.95	33.82	.....
1850....	30.25	31.91	40.94	50.72	.....	.....	76.20	75.25	.....	55.75	.....	23.25	.....	.....	.....	.....	.....
1851....	34.01	34.15	.....	49.40	59.02	69.43	72.90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1852....	.....	.....	.....	.....	.....	.....	.....	.....	59.56	47.87	34.39	29.62	.....	.....	47.27	.....	.....
1853....	31.16	28.00	37.86	53.92	60.34	66.40	69.37	66.71	62.74	48.27	40.30	31.39	50.71	67.49	50.44	30.18	49.70
1854....	28.51	34.07	41.46	49.80	54.18	68.18	71.80	67.73	61.04	55.56	40.00	33.32	48.48	69.24	52.20	31.97	50.47
1855....	31.88	36.26	40.09	50.89	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean...	31.45	33.25	40.71	51.28	57.06	68.84	72.57	69.98	61.93	51.27	38.57	30.21	49.68	70.46	50.59	31.64	50.59

## LAS VEGAS, NEW MEXICO.

*Latitude 35° 35', Longitude 105° 16'. Altitude 6,418 feet.*

## FORT UNION, NEW MEXICO.

*Latitude 35° 54', Longitude 104° 57'. Altitude 6,670 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1850....	38.15	34.30	41.28	46.20	51.77	64.18	67.93	73.01	66.47	48.88	32.98	21.73	46.42	68.37	49.44	31.39	48.90
1851....	28.57	28.10	33.19	47.93	61.06	71.46	74.90	.....	.....	.. ...	.....	.....	47.39	.....	.....	.....	.....
1851....	.....	.....	.....	.....	.....	.....	.....	64.49	51.70	46.62	35.91	31.71	.....	.....	46.74	.....	.....
1852....	29.69	35.94	40.88	50.34	57.05	60.79	67.46	64.60	56.44	47.21	34.27	35.05	49.42	64.28	46.21	33.56	48.37
1853....	33.80	31.11	39.78	52.21	56.69	64.52	64.84	64.29	58.38	46.37	42.56	34.12	49.56	64.55	49.10	33.01	49.06
1854....	32.32	36.02	40.91	48.01	54.18	68.18	71.80	67.73	61.04	55.56	40.00	33.32	48.48	69.24	52.20	31.97	50.47
1855....	35.93	34.95	39.84	50.73	57.34	.....	.....	.....	.....	.....	.....	.....	49.30	.....	.....	.....	.....
Mean...	33.08	33.40	39.31	49.24	56.35	65.63	69.39	66.83	58.80	49.07	37.14	31.19	48.30	67.35	48.34	32.56	49.14

The position and exposure of these posts is such as to permit combination of the records in one mean result. The change to *Fort Union* was made in August, 1851.

## FORT MASSACHUSETTS, NEW MEXICO.

*Latitude 37° 32', Longitude 105° 23'. Altitude 8,365 feet.*

1852....	.....	.....	.....	.....	.....	.....	.....	.....	48.67	40.12	24.39	19.15	.....	.....	37.73	.....	.....
1853....	20.30	18.84	31.28	45.23	47.73	58.91	62.89	61.58	53.67	.....	.....	.....	41.41	61.13	.....	.....	.....
1854....	.....	.....	.....	.....	49.41	57.50	64.07	62.84	52.74	45.94	29.77	21.43	.....	61.47	42.82	.....	.....
1855....	19.09	25.04	.....	44.41	51.19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean...	19.69	22.24	31.28	44.82	49.44	58.20	63.48	62.21	51.62	43.03	27.08	20.29	41.84	61.29	40.58	20.74	41.11

## FORT DEFIANCE, NEW MEXICO.

*Latitude 35° 44', Longitude 109° 15'. Altitude 7,200? feet.*

1851....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27.72	.....	.....	.....	.....	.....
1852....	.....	.....	.....	.....	52.72	64.75	68.16	66.96	50.07	45.63	32.45	28.70	.....	66.62	42.72	.....	.....
1853....	29.47	28.06	37.57	48.15	51.63	64.86	70.52	69.00	61.39	44.21	36.43	28.65	45.78	68.13	47.34	28.73	47.50
1854....	24.35	30.65	37.04	46.54	51.08	62.40	70.95	64.94	57.11	48.89	38.09	32.03	44.89	66.10	48.03	29.01	47.01
1855....	24.72	33.62	40.28	45.06	49.16	.....	.....	.....	.....	.....	.....	.....	44.83	.....	.....	.....	.....
Mean...	26.18	30.78	38.30	46.58	50.99	64.00	69.88	66.96	56.19	46.24	35.66	29.27	45.29	67.61	46.03	28.74	46.92

## FORT YUMA, CALIFORNIA.\*

*Latitude 32° 32' 3", Longitude 114° 36' 9". Altitude 355 feet.*

1850....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31.70	.....	.....	.....	.....	.....
1851....	54.40	53.15	62.64	72.95	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1852....	.....	.....	.....	.....	.....	87.00	88.65	88.10	83.55	72.90	61.46	55.47	.....	87.92	72.64	.....	.....
1853....	59.32	58.60	67.61	73.22	77.66	89.49	94.12	92.16	89.33	79.44	65.74	57.10	72.83	91.92	78.17	58.34	75.31
1854....	54.17	52.18	64.50	74.71	74.12	85.40	94.05	90.62	85.48	77.25	66.04	59.47	71.11	90.02	76.26	57.61	73.75
1855....	57.92	61.20	69.73	72.96	78.41	.....	.....	.....	.....	.....	.....	.....	73.70	.....	.....	.....	.....
Mean...	56.45	58.03	66.12	73.46	76.73	87.29	92.27	90.29	86.12	76.53	64.41	55.93	72.10	89.95	75.69	56.80	73.62

\* See letter of Assistant Surgeon Horace R. Wirtz, p. 437.



## SAN DIEGO, CALIFORNIA.

*Latitude 32° 42', Longitude 117° 14'. Altitude 150 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1849....	.....	.....	.....	.....	.....	.....	74.27	75.33	69.93	64.15	56.40	51.04	.....	.....	63.49	.....	.....
1850....	51.25	52.42	54.87	59.41	61.86	64.00	67.39	74.49	71.44	66.28	56.52	48.69	58.71	68.63	64.75	50.79	60.72
1851....	51.28	50.30	55.19	.....	.....	.....	.....	.....	.....	.....	56.38	52.67	.....	.....	.....	.....	.....
1852....	53.07	55.76	55.07	57.74	61.29	67.09	73.25	73.50	73.57	65.13	57.19	51.71	58.03	70.95	65.30	53.31	61.95
1853....	53.78	52.92	57.83	62.66	63.44	68.43	72.85	72.88	70.74	68.94	58.39	53.52	61.31	71.39	66.02	53.41	63.03
1854....	51.90	52.50	54.62	62.60	60.69	65.04	73.14	73.23	67.64	62.99	56.65	52.60	59.30	70.47	62.43	52.33	61.13
1855....	50.11	55.72	58.42	63.72	66.06	72.40	.....	.....	.....	.....	.....	.....	62.73	.....	.....	.....	.....
Mean...	51.90	53.27	56.00	61.23	62.67	67.39	72.72	73.68	70.87	65.50	56.92	51.70	59.97	71.26	64.43	52.29	62.00

## POSTS DEL CHINO AND JURUPA, CALIFORNIA.

*Latitude 34° 00', Longitude 117° 25'. Altitude 1,000? feet.*

1851....	.....	.....	.....	.....	.....	.....	71.89	73.68	70.06	68.53	60.39	53.61	.....	.....	66.34	.....	.....
1852....	55.43	56.82	56.57	60.75	63.75	68.76	73.19	71.57	.....	.....	.....	.....	60.36	71.17	..	.....	.....
1852....	.....	.....	.....	.....	.....	.....	.....	.....	.....	64.81	56.03	51.12	.....	.....	.....	.....	.....
1853....	56.29	54.70	59.29	64.42	63.56	71.83	76.22	74.51	74.07	69.00	57.00	53.62	62.42	74.19	66.69	54.87	64.54
1854....	50.32	53.08	54.49	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean...	54.01	54.87	56.78	62.58	63.66	70.29	73.77	73.25	72.06	67.46	57.81	52.78	61.01	72.44	65.78	53.89	63.28

The longitude is that of *Jurupa*, the other position being twenty miles westward in the same valley. The change of position was made in September, 1852. These posts are designated *Rancho del Chino* and *Rancho de Jurupa*, in the registers.

## MONTEREY, CALIFORNIA.

*Latitude 36° 36', Longitude 121° 52'. Altitude 140 feet.*

1847....	.....	.....	.....	.....	55.39	57.90	58.64	59.26	61.16	57.91	52.40	50.60	.....	58.60	56.82	.....	.....
1848....	51.38	46.62	50.15	52.82	55.25	58.05	54.40	60.08	.....	.....	.....	.....	52.74	57.51	.....	.....	.....
1849....	.....	.....	.....	.....	61.77	56.69	61.70	58.03	57.22	58.91	55.20	50.87	.....	58.81	57.11	.....	.....
1850....	49.23	50.15	50.67	54.59	55.84	56.72	57.58	57.70	59.56	57.01	53.49	49.09	53.70	57.33	56.69	49.39	54.78
1851....	.....	.....	.....	.....	.....	.....	57.06	62.84	59.14	59.96	55.56	53.16	.....	.....	58.22	.....	.....
1852....	56.11	54.63	53.53	53.87	55.56	59.90	61.55	.....	.....	.....	.....	.....	54.32	.....	.....	.....	.....
Mean...	52.25	50.47	51.45	53.76	56.76	57.85	58.49	59.58	59.27	58.45	54.16	50.93	53.99	58.64	57.29	51.22	55.29

## FORT MILLER, CALIFORNIA.

*Latitude 37° 00', Longitude 119° 40'. Altitude 402 feet.*

1851....	.....	.....	.....	.....	.....	.....	82.71	75.41	69.87	55.26	48.00	.....	.....	68.84	.....	.....
1852....	48.27	55.74	55.37	63.45	72.33	88.55	.....	83.82	81.45	66.33	52.51	48.54	63.72	.....	66.76	50.85
1853....	49.75	53.09	58.61	64.23	70.16	84.57	89.56	82.56	75.00	68.77	55.72	46.41	64.33	85.56	66.50	49.75
1854....	43.60	49.57	52.98	62.54	66.80	76.17	90.92	.....	74.48	65.12	58.41	49.10	60.77	.....	66.00	47.72
1855....	46.54	53.66	59.75	61.22	65.96	83.37	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean...	47.04	53.01	56.68	62.86	68.81	83.10	90.24	83.03	76.09	67.52	55.48	48.01	62.78	85.48	66.36	49.35

## SAN FRANCISCO, CALIFORNIA.

*Latitude 37° 48', Longitude 122° 26'. Altitude 150 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1847....	.....	.....	.....	.....	.....	.....	.....	.....	.....	57.55	50.23	50.79	.....	.....	.....	.....	.....
1848....	49.33	50.49	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1850....	.....	.....	49.79	54.45	55.21	57.20	.....	.....	.....	.....	.....	.....	53.15	.....	.....	.....	.....
1852....	.....	.....	.....	.....	.....	.....	59.86	58.10	58.50	55.46	54.62	50.09	.....	.....	56.12	.....	.....
1853....	51.00	49.91	53.06	54.93	56.38	57.60	56.58	56.90	58.96	59.66	55.94	51.28	54.79	57.03	58.19	50.73	55.18
1854....	47.93	51.72	52.00	56.11	53.56	55.30	57.25	56.65	57.31	58.98	56.45	52.03	53.89	56.40	57.58	50.76	54.66
1855....	50.14	54.99	56.61	55.98	56.01	57.35	.....	.....	.....	.....	.....	.....	56.20	.....	.....	.....	.....
Mean...	49.60	51.78	52.87	55.37	55.29	56.86	57.90	57.22	58.26	57.91	54.31	51.20	54.51	57.33	56.83	50.86	54.88

## BENICIA BARRACKS, CALIFORNIA.

*Latitude 38° 03', Longitude 122° 08'. Altitude 64 feet.*

1849....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	46.15	47.95	.....	.....	.....	.....	.....
1850....	47.37	49.16	51.20	.....	.....	69.77	67.50	66.74	65.00	64.30	54.44	46.45	.....	68.00	61.25	47.66	...
1851....	49.54	50.08	55.42	60.12	61.83	65.16	65.68	70.07	64.08	65.88	56.93	49.03	59.12	66.97	62.29	49.55	59.48
1852....	48.20	52.43	52.16	56.89	58.65	65.71	70.09	67.82	67.98	60.58	55.86	49.04	55.90	67.87	61.47	49.89	58.78
1853....	48.63	49.85	52.90	56.13	60.62	68.68	65.14	63.98	64.37	64.50	56.29	46.57	56.55	65.93	61.72	48.35	58.14
1854....	42.59	58.85	50.27	57.00	56.40	62.45	68.37	64.42	61.68	58.91	55.90	48.67	54.56	65.08	58.83	46.70	56.29
1855....	45.78	52.17	56.38	56.91	58.29	70.66	.....	.....	.....	.....	.....	.....	57.19	.....	.....	.....	.....
Mean...	47.02	52.09	53.05	57.41	59.16	67.07	67.36	66.61	64.62	62.83	54.26	47.95	56.54	67.01	60.57	49.02	58.29

## SACRAMENTO, AND CAMP FAR WEST, CALIFORNIA.

*Latitude 38° 33', Longitude 121° 20'. Altitude 50 feet.\**

1849....	.....	.....	.....	.....	.....	.....	72.25	69.60	64.42	63.96	51.52	45.58	.....	.....	60.00	.....	.....
1850....	44.05	45.88	49.20	57.55	71.88	.....	.....	.....	.....	66.00	50.25	43.09	59.54	.....	.....	44.34	.....
1851....	45.34	48.03	52.62	60.84	62.13	71.66	75.53	76.29	69.34	64.70	54.35	46.61	58.53	74.49	62.76	46.66	60.61
1852....	46.61	51.44	52.06	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean...	45.33	48.45	51.29	59.20	67.00	71.66	73.89	73.00	66.88	64.89	52.04	45.09	59.16	72.85	61.27	46.29	59.89

\* *Camp Far West* is in lat. 39° 07', long. 121° 18', and 150 or 200 feet above the sea. The observations were taken at this post after October, 1850.

## FORT READING, CALIFORNIA.

*Latitude 40° 30', Longitude 122° 05'. Altitude 674 feet.*

1852....	.....	.....	.....	58.66	.....	79.00	80.37	78.75	72.33	59.76	51.80	43.42	.....	79.37	61.30	.....	.....
1853....	48.04	49.12	52.37	58.77	65.96	78.51	84.76	78.76	70.70	65.05	53.12	46.23	59.03	80.68	62.96	47.80	62.62
1854....	40.00	47.26	53.61	60.36	66.92	72.47	83.75	79.76	72.42	62.23	53.80	44.80	60.30	78.66	62.82	44.02	61.45
1855....	44.64	51.56	57.31	59.92	64.44	81.65	.....	.....	.....	.....	.....	.....	60.56	.....	.....	.....	.....
Mean...	44.23	49.31	54.43	59.45	65.77	77.91	82.96	79.09	71.78	62.35	52.91	44.82	59.88	80.00	62.35	46.12	62.09

## FORT HUMBOLDT, CALIFORNIA.

*Latitude 40° 46', Longitude 124° 09'. Altitude 50 feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1854....	40.83	43.54	47.37	54.06	53.94	58.04	56.71	57.00	57.02	53.00	48.62	45.69	51.79	57.55	52.88	43.35	51.39
1855....	45.50	49.97	52.59	.....	56.56	59.19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ft. Ross*	47.20	48.00	49.90	51.30	55.30	56.90	57.90	58.40	56.00	53.40	50.90	48.90	52.20	57.70	53.10	48.00	52.80

\* A mean of four years of observation by Russian authorities. Fort Ross is in latitude 38° 35', and on the coast between Humboldt Bay and San Francisco.

## FORT JONES, CALIFORNIA.

*Latitude 41° 36', Longitude 122° 52'. Altitude 2,570 feet.*

1853....	35.07	37.96	42.01	47.14	55.87	64.36	72.04	.....	.....	53.67	42.74	33.42	48.34	.....	.....	35.48	.....
1854....	31.36	35.02	41.16	51.02	53.55	58.76	71.07	68.66	62.72	50.00	40.89	31.58	48.58	66.16	51.20	32.65	49.65
1855....	27.68	39.41	46.17	49.70	54.65	.....	.....	.....	.....	.....	.....	.....	50.17	.....	.....	.....	.....
Mean...	31.37	37.46	43.11	49.29	54.69	61.56	71.56	68.66	62.72	51.84	41.81	32.50	49.03	67.26	52.12	33.78	51.40

## FORT ORFORD, OREGON.

*Latitude 42° 44', Longitude 124° 29'. Altitude 50 feet.*

1852....	.....	.....	.....	.....	.....	60.47	61.33	62.69	59.18	54.70	50.59	44.15	.....	61.49	54.82	.....	.....
1853....	48.72	46.47	47.92	51.55	57.06	.....	.....	.....	.....	.....	.....	.....	52.18	.....	.....	.....	.....
1854....	.....	.....	.....	.....	.....	.....	58.14	59.50	58.65	55.07	53.25	48.19	.....	.....	55.66	.....	.....
1855....	48.04	49.30	51.23	50.63	52.54	57.58	.....	.....	.....	.....	.....	.....	51.47	.....	.....	.....	.....
Mean...	48.38	47.88	49.57	51.09	54.80	59.03	59.73	61.09	58.91	54.88	51.87	46.17	51.82	59.95	55.22	47.48	53.62

## FORT VANCOUVER, (COLUMBIA BARRACKS,) WASHINGTON TERRITORY.

*Latitude 45° 40', Longitude 122° 30'. Altitude 50 feet.*

1849....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	34.60	.....	.....	.....	.....	.....
1850....	38.14	40.99	37.29	56.61	60.19	61.32	67.40	66.65	61.62	53.83	43.11	35.78	51.36	65.12	52.85	38.30	51.91
1851....	42.01	42.90	45.29	.....	.....	.....	.....	.....	.....	.....	.....	36.89	.....	.....	.....	40.60	.....
1852....	42.74	42.19	40.66	48.08	59.81	67.11	.....	.....	.....	53.90	45.08	33.20	49.52	.....	.....	39.37	.....
1853....	37.81	42.13	46.58	54.16	60.00	63.09	70.83	64.04	60.28	53.51	45.37	41.78	53.58	66.00	53.05	40.57	53.30
1854....	.....	38.05	45.00	52.43	57.18	56.85	67.90	66.00	60.54	51.96	52.49	36.81	51.54	63.58	55.00	.....	.....
1855....	42.12	43.71	50.04	51.46	57.57	64.97	.....	.....	.....	.....	.....	.....	53.02	.....	.....	.....	.....
Mean...	40.56	41.66	44.14	52.55	58.95	62.67	68.71	65.56	60.81	53.30	46.51	36.51	51.88	65.65	53.54	39.54	52.65

## FORT DALLES, OREGON.

*Latitude 45° 36', Longitude 120° 55'. Altitude 350 feet.*

1850 ..	.....	.....	.....	.....	.....	.....	.....	.....	57.43	52.64	37.93	32.55	.....	.....	49.33	.....	.....
1851....	37.95	41.39	46.69	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1852....	.....	.....	.....	.....	.....	.....	.....	.....	.....	53.57	41.25	24.95	.....	.....	.....	.....	.....
1853....	32.27	37.14	43.76	53.41	62.14	66.58	74.92	70.21	63.71	53.35	41.80	40.07	53.10	70.57	53.62	36.49	53.44
1854....	21.98	38.94	46.00	53.51	58.94	63.51	71.51	71.34	64.00	52.88	44.34	37.07	52.82	68.79	53.71	32.66	52.00
1855....	40.16	42.57	49.33	52.02	57.66	71.19	.....	.....	.....	.....	.....	.....	53.00	.....	.....	.....	.....
Mean...	33.09	40.01	46.45	52.98	59.58	67.09	73.22	70.77	61.71	53.61	41.33	33.66	53.00	70.36	52.22	35.59	52.79



FORT STEILACOOM, WASHINGTON TERRITORY.

*Latitude 47° 10', Longitude 122° 25'. Altitude 300? feet.*

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn.	Winter.	Year.
1849....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	46.81	36.29	.....	.....	.....	.....	.....
1850....	35.87	39.12	40.51	47.33	55.60	61.11	64.25	63.40	56.52	51.87	41.21	37.15	47.81	62.93	49.86	37.38	49.49
1851....	40.60	40.79	43.17	51.49	54.38	61.26	62.93	66.82	57.01	52.90	46.27	41.15	49.68	63.67	52.06	40.78	51.55
1852....	43.26	42.60	40.18	46.49	57.10	63.00	63.51	63.88	57.06	51.69	43.75	33.28	47.92	63.46	50.83	39.71	50.48
1853....	39.73	39.78	41.92	48.74	57.62	60.47	66.73	62.11	58.56	53.58	45.10	44.62	49.43	63.10	52.41	41.38	51.58
1854....	30.61	39.64	43.87	50.83	55.57	58.96	63.71	62.80	59.61	51.73	46.67	43.06	50.09	61.82	52.67	37.77	50.59
1855....	41.95	43.15	47.75	48.39	54.79	59.11	.....	.....	.....	.....	.....	.....	50.31	.....	.....	.....	.....
Mean...	38.67	40.58	42.90	48.88	55.84	60.65	64.23	63.80	57.75	52.35	44.97	39.26	49.21	62.89	51.69	39.50	50.82

ASTORIA, OREGON.

*Latitude 46° 11', Longitude 123° 48'. Altitude 50 feet.*

1850....	.....	.....	.....	.....	.....	.....	.....	62.22	59.38	55.45	46.44	40.66	.....	...	53.76	.....	.....
1851....	43.00	43.62	45.73	52.76	55.00	59.53	61.55	63.76	58.13	.....	.....	.....	51.16	61.58	.....	42.43	52.23

CANTONMENT LORING, (FORT HALL,) OREGON.

*Latitude 43° 04', Longitude 112° 27'. Altitude 4,800 feet.*

1849....	.....	.....	.....	.....	.....	.....	.....	63.39	59.62	47.97	34.67	22.50	.....	.....	47.42	.....	.....
1850....	24.31	24.06	25.23	42.71	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23.62	.....

GREAT SALT LAKE, UTAH.

*Latitude 40° 46', Longitude 112° 06'. Altitude 4,351 feet.*

1850....	26.40	32.20	35.58	48.00	65.25	71.29	80.55	.....	.....	.....	.....	.....	49.61	.....	.....	.....	.....
1853....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	36.57	.....	.....	.....	.....	.....
1854....	24.20	35.46	40.50	52.40	.....	.....	.....	.....	.....	.....	41.73	31.65	.....	.....	.....	35.44	.....
1855....	30.75	37.38	43.17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean...	27.12	35.01	39.75	50.20	65.25	71.29	80.55	.....	.....	.....	41.73	34.11	51.73	75.92	.....	32.08	53.24

To obtain a nearer approximation to the temperature of this district the observations of Captain Stansbury, in 1850, and those of Lieutenant Beckwith, from December, 1853, to April, 1854, are incorporated.

## SERIES OF MONTHLY AND ANNUAL MEASUREMENTS OF RAIN.

The entire amount of water falling in rain and snow is in all cases intended to be included in the summaries given in the original record, and of which the results for separate years are here consolidated to determine the mean for a series of years. In some cases the amount falling in snow is not fully given as water, and some such omissions have been supplied by taking one-tenth of the reported depth of snow as its equivalent in water.

### HANCOCK BARRACKS, MAINE.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1836....	....	....	....	....	....	0.46	3.89	3.28	2.33	3.01	1.74	4.79	....	7.63	7.07	.....	.....
1837....	2.00	4.40	1.82	2.99	2.21	2.95	4.80	3.90	3.54	2.40	2.87	1.80	7.02	11.65	8.51	8.20	35.68
1838....	1.85	0.62	0.12	1.40	3.87	6.69	2.81	3.54	3.78	5.42	6.72	1.55	5.40	13.04	15.92	4.02	38.37
1839....	2.55	0.94	1.96	4.24	3.35	5.17	7.20	4.50	1.74	0.53	3.89	2.70	9.55	17.40	6.16	5.35	38.77
1840....	1.34	1.35	2.67	5.32	1.52	5.93	3.09	2.97	3.09	5.58	4.11	3.62	9.51	11.99	14.78	6.31	41.91
1841....	5.99	0.81	2.13	3.31	4.74	5.80	1.98	0.12	4.52	1.84	2.53	3.20	10.18	7.90	8.89	10.00	36.97
1842....	2.82	3.41	1.68	1.19	2.64	3.94	9.40	1.56	2.74	4.00	2.47	1.75	5.51	14.90	9.61	7.98	37.60
1843....	2.02	3.15	2.79	3.92	2.80	2.37	2.70	8.92	1.10	7.84	2.14	1.58	9.51	13.99	11.08	6.75	41.33
1844....	2.80	0.79	1.66	1.57	2.87	2.73	3.55	1.80	1.85	4.62	3.13	3.43	6.10	8.08	9.60	7.02	30.80
1845....	4.37	1.73	1.70	1.48	2.51	2.10	8.86	2.15	....	....	....	....	5.69	13.11	.....	.....	.....
Mean / 9½ yrs }	2.86	1.91	1.84	2.83	2.95	3.82	4.83	2.27	2.94	3.92	3.20	2.71	7.62	11.92	9.95	7.48	36.97

### FORT KENT, MAINE.

1844....	....	...	....	....	....	....	....	....	1.36	4.41	3.86	3.36	.....	.....	9.64	.....	.....
1845....	3.75	2.60	1.77	1.06	2.63	1.36	7.72	2.57	....	....	....	....	5.46	11.65	.....	9.71	36.46

### FORT SULLIVAN, MAINE.

1841....	5.15	0.79	2.55	6.54	1.51	2.94	5.10	1.15	2.48	1.73	2.99	5.18	10.60	9.19	7.20	11.12	38.11
1842....	3.54	3.61	2.75	1.60	2.15	2.00	1.75	6.15	2.85	5.45	4.00	4.80	6.50	9.90	12.30	11.95	40.65
1843....	2.15	2.80	3.38	3.05	2.35	1.55	3.83	3.75	0.95	3.55	3.40	4.70	8.78	9.13	7.90	9.65	38.46
1844....	1.95	1.65	2.75	0.70	3.65	0.82	5.34	4.48	2.35	2.54	4.25	7.06	7.10	10.64	9.14	10.66	37.54
1845....	3.12	2.62	2.25	2.53	5.17	2.00	6.51	3.85	....	....	....	....	9.95	12.36	.....	.....	...
1849. .	....	....	....	....	....	....	....	....	5.24	1.86	2.25	2.47?	.....	9.65	.....	.....	.....
1850....	3.83	2.32	2.80	1.50	5.10	6.10	7.10	2.58	4.80	3.24	3.00	4.80	9.40	15.78	11.04	10.95	47.17
1851....	2.81	4.10	4.60	3.30	2.80	1.40	3.35	0.90	3.30	4.50	3.00	2.60	10.70	5.65	10.80	8.91	36.06
1852....	4.30	3.60	2.90	4.10	0.30	2.20	4.00	4.80	3.40	3.50	4.20	2.50	7.30	11.00	11.10	10.40	39.80
1853....	1.70	7.20	4.50	1.90	3.30	0.35	1.70	4.90	....	....	....	....	9.70	6.95	.....	.....	.....
Mean / 8½ yrs }	3.17	3.18	3.16	2.80	2.92	2.15	4.28	3.62	3.17	3.29	3.39	4.26	8.88	10.05	9.85	10.61	39.39

FORT PREBLE, MAINE.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring	Summer	Autumn	Winter.	Year.
1840....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.52	2.20	.....	.....	.....	.....	.....
1841....	4.28	0.79	1.89	5.05	2.87	1.38	0.74	4.43	4.03	1.48	3.67	6.38	9.81	6.55	9.18	11.45	87.00
1842....	1.91	3.40	1.86	1.80	2.40	4.26	2.95	3.59	4.58	0.98	3.53	5.38	6.06	10.89	9.09	8.69	36.64
1843....	1.87	.....	5.20	4.42	4.05	4.79	1.81	6.80	0.89	5.21	3.64	1.04	13.67	12.40	9.24	.....	.....
1844....	3.43	0.75	3.59	0.84	3.74	3.34	1.76	2.27	1.76	4.66	2.92	4.10	7.67	7.87	9.34	8.28	32.66
1845....	3.75	2.07	2.37	1.44	3.14	1.56	5.86	2.93	2.57	..	.....	.....	6.95	10.85	.....	.....	.....
1849....	.....	.....	.....	.....	.....	.....	.....	.....	2.70	4.50	5.30	3.95	.....	12.50	.....	.....	.....
1850....	4.85	3.20	2.70	4.60	15.50	4.80	2.90	3.85	5.95	3.45	2.80	4.50	22.50	11.65	12.20	12.55	59.00
1851....	3.55	5.80	2.45	7.35	3.90	3.87	3.65	2.22	4.41	8.43	6.58	2.89	13.70	9.74	10.42	12.24	46.10
1852....	4.79	2.56	3.59	8.84	2.82	5.02	3.19	5.81	3.42	5.80	6.88	6.10	14.95	16.52	15.10	13.45	60.02
1853....	1.87	8.55	2.61	3.76	7.03	1.47	2.63	3.58	.....	.....	.....	.....	13.45	7.73	.....	.....	.....
Mean { 5½ yrs }	3.87	3.89	2.92	4.14	5.05	3.89	2.78	4.11	3.31	4.25	4.37	4.17	12.11	10.28	11.93	10.98	45.25

FORT CONSTITUTION, NEW HAMPSHIRE.

1836....	.....	.....	.....	3.27	1.29	2.97	1.73	2.05	0.61	3.91	3.57	4.26	.....	6.80	8.69	.....	.....
1837....	1.91	1.53	2.29	4.37	5.21	4.09	1.05	1.65	0.85	1.48	2.01	1.72	11.87	6.79	4.84	5.16	23.16
1838....	2.62	0.97	1.14	2.21	3.88	3.31	2.00	3.79	3.98	4.24	3.35	0.85	6.73	9.10	11.57	4.44	31.84
1839....	0.97	2.06	0.80	3.28	3.85	2.71	2.70	2.55	1.58	0.88	2.05	3.55	7.93	7.96	4.16	6.58	26.93
1840....	0.90	1.37	3.57	4.05	1.93	2.02	1.81	2.99	1.26	.....	.....	.....	9.85	5.32	.....	.....	.....
1842....	1.84	2.68	3.08	1.59	3.13	4.43	3.18	4.23	2.61	0.66	2.41	4.45	7.80	11.84	5.68	5.47	33.79
1843....	1.28	3.57	1.40	2.77	0.60	6.52	1.70	7.16	0.43	3.33	2.67	2.72	4.77	15.83	6.43	7.57	34.15
1844....	2.83	1.43	3.60	0.85	2.75	1.45	1.36	2.23	2.57	4.54	2.99	5.55	6.70	5.04	9.00	9.81	30.55
1845....	3.01	2.88	3.20	1.15	3.15	1.89	7.33	2.72	.....	.....	.....	.....	7.50	11.94	.....	.....	.....
1849....	.....	.....	.....	.....	.....	.....	1.35	4.07	1.89	6.01	3.50	3.36	.....	11.40	.....	.....	.....
1850....	6.14	2.72	3.45	4.70	8.31	2.73	2.04	6.50	6.68	2.76	2.43	2.22	16.46	11.27	11.92	11.08	50.73
1851....	2.13	5.12	0.55	7.13	2.55	3.67	4.30	1.92	3.23	5.47	6.10	3.18	10.23	9.89	14.80	10.43	45.35
1852....	3.51	2.55	2.26	6.60	1.42	2.79	2.53	6.20	2.71	2.92	4.85	4.65	10.28	11.52	9.98	10.71	42.49
1853....	2.35	4.82	0.29	3.23	6.96	0.52	0.92	5.18	3.21	.....	.....	.....	10.48	6.62	.....	.....	.....
Mean { 18 yrs }	2.42	2.64	2.16	3.44	3.43	3.01	2.40	3.80	2.43	3.29	3.23	3.32	9.03	9.21	8.95	8.88	35.57

WATERTOWN ARSENAL, MASSACHUSETTS.

1836....	.....	.....	.....	.....	.....	4.26	2.45	1.11	0.99	2.57	4.45	4.69	.....	7.82	8.31	.....	.....
1837....	2.46	2.95	2.56	3.43	5.92	4.34	1.84	2.13	0.51	1.71	1.74	2.47	11.91	8.31	3.96	7.88	32.06
1838....	3.16	2.13	2.18	2.75	3.85	4.90	2.07	4.94	7.74	4.90	4.30	1.02	6.78	11.91	16.94	6.86	43.99
1839....	1.08	2.39	1.24	6.86	4.73	2.74	4.50	4.63	1.96	2.26	2.07	3.48	12.83	11.87	6.29	11.90	42.89
1840....	2.91	2.76	3.76	5.18	2.43	2.82	2.84	5.10	2.62	4.19	3.96	4.46	11.42	10.76	15.77	10.13	48.03
1841....	5.06	1.46	3.17	.....	.....	.....	2.01	6.15	4.29	3.21	3.95	4.19	.....	.....	11.45	10.71	.....
1843....	1.96	6.74	5.41	3.60	1.86	4.50	2.53	3.00	1.12	5.80	3.39	3.45	10.87	15.03	10.81	12.15	48.41
1844....	3.51	1.64	4.78	0.38	3.67	1.69	2.79	3.80	4.72	5.86	3.05	.....	8.83	7.73	13.63	.....	.....
Mean { 7 yrs }	2.87	2.85	3.30	3.70	3.75	3.61	2.64	4.41	3.00	3.85	3.93	4.11	10.75	10.66	10.83	9.83	42.17



## FORT INDEPENDENCE, MASSACHUSETTS.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1851....	...	....	...	...	....	....	1.60	1.44	1.24	3.95	4.40	1.28	.....	.....	9.50	.....	.....
1852....	3.50	1.32	1.26	4.00	1.20	2.71	1.92	5.35	1.60	1.42	2.94	3.00	6.46	9.98	5.96	7.82	30.22
1853....	2.16	3.48	1.16	2.77	6.81	2.55	4.04	4.70	3.90	2.74	4.52	2.71	10.24	11.29	11.16	8.85	41.04
1854....	2.50	3.36	2.35	5.40	4.28	2.00	4.44	0.50	3.31	1.47	5.57	3.23	12.23	6.94	10.38	9.09	38.64
1855....	3.41	3.30	1.16	2.72	1.62	....	...	....	....	....	....	....	5.50	.....	.....	.....	.....
Mean of 4 yrs {	3.62	2.84	1.54	2.72	3.35	2.12	3.00	3.00	2.52	2.39	4.36	2.55	8.60	8.42	9.27	9.01	35.30

NOTE.—The measurement of rain at *Fort Independence* appears deficient for most of this period. The record of Cambridge Observatory gives 40.5 inches for 1852, and 53.8 inches for 1853, the differences from these measures being quite equally distributed through the monthly results.

## FORT ADAMS, RHODE ISLAND.

1841....	....	....	....	....	....	....	....	...	....	4.51	6.69	7.22	.....	.....	.....	.....	.....
1842....	4.48	5.95	4.54	3.18	4.65	10.92	3.83	4.88	2.97	0.50	3.66	5.43	12.37	19.43	7.43	15.86	54.79
1843....	4.22	6.43	5.68	7.56	3.69	2.65	2.88	9.12	1.96	10.02	6.84	7.16	16.93	14.05	18.82	17.81	67.62
1844....	5.85	1.24	3.17	1.49	5.21	1.77	5.78	4.72	5.25	8.30	3.31	2.98	9.87	12.27	16.86	10.07	49.07
1845....	2.90	3.15	2.49	1.67	3.22	2.31	2.78	1.54	2.96	4.74	9.49	3.44	7.38	8.63	17.19	9.49	12.69
1846....	2.49	1.98	2.88	1.95	2.75	0.79	2.84	3.70	1.18	....	....	....	7.58	7.33	.....	.....	.....
1848....	....	....	....	....	....	....	...	....	....	....	8.55	5.48	.....	.....	.....	.....	.....
1849....	1.65	3.27	6.25	2.10	4.26	2.30	1.67	3.33	2.33	7.07	4.52	3.85	12.61	7.30	13.95	8.77	42.63
1850....	5.24	3.51	6.82	4.97	5.75	2.42	4.01	3.65	5.23	3.58	2.39	6.58	17.54	10.08	11.20	15.33	54.15
1851....	3.12	5.68	1.41	7.36	4.10	2.10	6.62	3.65	3.49	4.47	6.84	3.32	13.47	12.27	14.80	12.12	52.76
1852....	4.43	5.41	5.90	8.67	3.92	1.70	2.10	6.90	2.55	2.60	6.62	6.53	18.49	10.70	11.77	16.39	57.33
1853....	6.68	5.13	4.65	10.48	7.56	2.88	4.92	5.34	3.25	....	...	....	22.69	12.64	.....	.....	.....
Mean of 10 yrs {	4.10	4.17	4.88	5.00	4.51	2.87	3.74	4.83	3.12	5.15	5.39	5.20	13.89	11.44	13.66	13.47	52.46

NOTE.—The measurements at Fort Adams, particularly for 1843, appear somewhat in excess. A record at New Bedford, for forty years, by Samuel Rodman, esq., gives 42 inches as the mean annual fall, and that at Brown University for twenty years is very nearly the same measure.

## FORT TRUMBULL, CONNECTICUT.

1843....	2.05	3.42	5.92	4.20	3.35	2.47	2.51	10.14	1.68	7.45	5.79	3.80	13.47	15.12	14.92	9.27	52.78
1844....	5.92	1.81	6.01	1.19	3.47	1.94	3.81	2.72	2.40	5.39	3.40	2.23	10.67	8.47	11.19	9.96	40.29
1845....	3.54	3.57	3.40	3.00	2.89	3.05	3.69	1.60	1.74	3.65	7.96	4.72	13.29	8.34	13.35	11.83	43.81
1846....	3.04	2.24	3.35	2.12	4.69	...	....	....	....	....	....	....	10.16	.....	.....	.....	.....
Mean of 3½ yrs {	3.64	3.76	4.67	2.63	3.60	2.49	3.34	4.82	1.94	5.50	5.72	3.58	10.90	10.65	13.16	10.98	45.69

## FORT HAMILTON, NEW YORK.

1839....	1.80	2.72	1.90	3.34	6.22	6.41	2.80	5.33	4.74	2.35	4.80	8.70	11.46	14.54	11.89	13.22	51.11
1840....	2.50	2.80	....	4.85	5.38	5.11	4.55	6.20	1.72	....	....	...	.....	15.86	.....	.....	.....
1843....	0.70	1.90	4.20	5.70	1.32	1.67	1.88	14.05	3.75	4.10	1.70	3.21	11.22	17.60	9.55	5.81	44.18
1844....	2.97	0.93	4.33	0.52	2.80	2.32	4.57	1.72	4.30	3.78	2.05	2.05	7.65	8.91	10.13	5.95	32.64
1845....	4.26	5.70	2.21	1.00	1.47	3.60	1.95	4.48	2.28	1.76	2.95	3.46	4.63	10.13	6.99	13.41	35.21
1846....	5.15	5.55	2.82	2.40	9.84	2.14	7.09	4.34	0.20	1.58	6.90	2.63	15.06	13.57	10.68	13.38	52.69
1847....	5.04	7.05	5.04	0.71	1.63	8.37	4.32	3.30	10.60	4.25	5.20	7.18	7.33	15.99	20.05	19.27	62.69
1848....	2.20	1.17	1.54	1.75	9.32	5.19	1.80	0.94	1.65	2.95	1.82	2.50	12.91	7.93	6.42	8.87	36.13

FORT HAMILTON, NEW YORK—Continued.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1849....	0.44	2.12	5.11	0.52	3.75	0.82	2.76	3.01	2.84	4.50	1.45	2.43	9.68	6.59	8.79	4.99	29.75
1850....	4.69	1.74	5.55	1.44	6.74	2.11	3.68	6.16	4.20	1.83	1.93	5.77	13.73	11.95	8.01	12.20	45.89
1851....	2.89	4.44	3.88	5.32	2.88	1.68	3.29	2.64	1.31	2.99	4.30	2.66	12.63	7.61	8.69	9.49	37.87
1852....	1.94	2.27	4.11	6.06	3.20	2.80	2.64	4.46	1.99	2.25	4.14	3.80	16.07	9.90	8.33	8.01	39.66
1853....	4.58	7.24	5.79	4.78	6.02	4.42	5.83	5.23	3.75	2.73	3.71	1.16	16.59	15.43	10.19	12.95	55.24
1854....	3.05	4.45	0.65	9.58	6.09	4.25	2.23	0.26	3.50	1.19	5.70	3.35	16.32	6.74	10.39	10.55	44.30
Mean...	2.98	3.57	3.65	3.42	4.62	3.65	3.55	4.44	3.38	2.50	3.75	3.54	11.69	11.64	9.93	10.39	43.65

FORT COLUMBUS, NEW YORK.

1836....	1.09	2.01	1.31	2.66	0.68	6.46	1.44	2.37	3.40	2.00	1.90	2.31	4.60	10.27	7.30	5.40	27.57
1837*....	2.70	3.70	8.20	7.50	9.70	8.50	5.90	6.30	2.10	2.11	2.90	6.10	25.20	20.70	7.11	12.50	65.51
1838....	3.93	3.70	4.10	2.50	3.99	3.12	1.83	4.70	4.96	3.64	3.10	2.24	10.59	9.74	11.70	9.57	41.90
1839....	0.69	2.05	2.46	3.65	8.37	4.94	1.35	4.92	3.59	1.45	2.19	7.61	14.18	11.21	7.23	10.35	42.97
1840....	1.84	1.84	2.92	2.03	2.33	2.40	1.80	4.25	1.84	4.59	2.90	1.00	7.34	8.45	9.33	4.68	29.80
1841....	5.30	0.50	2.35	3.93	3.95	4.65	4.90	2.50	2.90	4.40	3.70	2.70	10.23	12.05	11.60	8.80	42.03
1842....	1.07	2.55	1.25	3.60	3.60	3.30	3.80	2.51	2.10	4.30	1.80	3.59	8.45	8.91	8.20	7.42	32.98
1843....	1.00	2.31	2.13	2.14	1.00	0.76	1.64	15.26	3.06	5.91	2.82	3.34	5.27	17.66	11.79	6.65	41.37
1844....	2.66	1.03	4.50	0.55	3.41	2.37	6.00	2.73	4.50	4.68	1.73	2.82	8.46	11.10	10.31	6.51	36.38
1845....	4.87	3.22	3.33	1.22	1.75	3.70	1.75	3.21	2.62	2.50	3.40	2.51	6.30	8.66	8.52	10.60	34.68
1846....	3.92	3.01	3.92	4.01	9.70	1.39	6.01	3.88	0.48	1.34	8.36	2.09	17.53	11.28	10.18	9.02	48.01
1847....	4.62	5.74	8.48	1.33	2.18	6.73	1.62	6.93	12.20	2.13	6.29	6.23	12.19	15.33	20.62	16.71	64.85
1848....	1.75	1.63	2.23	1.16	7.23	4.56	2.64	1.41	1.87	6.61	1.59	4.62	10.67	8.61	10.07	7.45	36.80
1849....	0.61	2.26	4.87	0.02	3.47	0.73	1.43	4.63	1.55	5.63	1.88	4.01	8.96	6.84	9.06	6.88	37.74
1850....	5.57	2.64	4.64	2.72	9.20	3.07	3.92	7.21	4.71	3.16	2.33	5.36	16.56	14.20	10.20	13.57	54.53
1851....	1.46	4.50	1.70	6.94	4.73	0.90	4.72	3.47	1.26	2.95	4.53	3.72	13.37	9.18	8.74	8.68	39.97
1852....	2.92	3.08	4.43	4.74	2.24	2.11	3.25	6.20	2.29	2.06	6.07	4.45	11.41	11.56	10.42	10.45	43.84
1853....	4.14	4.93	2.03	3.32	5.80	4.50	4.40	5.50	5.49	3.90	6.80	1.04	11.15	14.70	16.19	10.16	52.20
1854....	2.60	4.00	0.70	9.80	7.70	2.20	1.90	1.03	1.90	1.50	3.95	8.60	17.20	5.13	7.65	15.20	45.13
Mean...	2.73	2.92	3.44	3.33	4.78	3.46	3.17	4.70	3.31	3.40	3.59	3.93	11.55	11.33	10.30	9.63	42.23

\* At Fort Wm. A. Bédou's Island, from January, 1837, to September, 1839.

WEST POINT, NEW YORK.

1836....	....	....	....	1.80	5.95	13.90	10.60	3.85	4.30	7.07	9.15	16.65	....	28.35	20.52	....	56.44
1837....	4.15	5.10	11.00	7.75	13.35	13.10	8.75	7.40	3.55	4.20	2.60	2.05	32.10	29.25	10.35	11.30	58.63?
1838....	2.25	2.45	5.30	5.15	12.90	12.27	5.90	5.85	12.50	8.05	6.10	4.65	23.35	24.62	26.65	9.35	83.37?
1839....	6.75	3.95	1.49	9.75	11.25	6.50	9.33	5.72	4.59	2.13	1.44	6.66	22.40	21.55	8.16	17.36	69.47?
1840....	2.50	2.50	3.41	4.59	3.35	2.80	2.73	5.18	3.68	8.33	3.10	6.25	16.35	10.71	14.51	11.25	47.62
1841....	9.95	2.00	5.25	6.60	4.37	5.97	3.40	2.80	3.05	2.10	3.35	5.10	16.22	12.17	13.50	17.05	53.94?
1842....	2.00	2.60	0.75	4.95	4.80	3.23	5.19	9.92	5.60	4.20	2.98	4.40	10.50	18.34	12.78	9.60	50.62
1843....	2.70	3.02	5.05	3.40	2.28	1.95	3.00	11.33	3.62	6.95	4.00	2.70	10.73	10.28	15.17	8.42	54.60
1844....	5.25	3.10	4.20	0.50	5.10	3.45	7.90	5.28	5.70	4.92	1.05	4.12	9.80	13.30	9.47	12.47	48.87
1845....	5.15	2.88	3.40	1.80	4.10	1.82	2.38	7.72	2.60	2.00	5.36	3.24	9.30	11.92	10.89	11.27	48.68
1846....	3.42	2.78	3.98	3.64	6.62	2.30	6.14	2.93	0.17	2.46	10.02	2.80	13.56	11.37	12.63	9.00	46.56
1847....	4.01	6.22	3.49	0.79	2.70	2.27	2.52	2.20	3.58	1.97	1.80	3.50	6.98	6.99	7.35	13.73	35.05

## WEST POINT, NEW YORK—Continued.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1848....	1.87	3.98	2.71	2.90	7.15	7.87	4.42	0.49	3.67	4.43	6.76	5.04	12.76	12.28	14.86	10.89	50.79
1849...	1.03	2.07	4.55	0.90	6.10	1.08	3.15	4.84	0.48	7.63	2.31	4.11	11.55	9.07	10.42	7.21	33.25
1850....	6.06	3.73	1.84	4.30	8.26	3.83	5.89	5.13	8.14	2.84	2.17	5.65	17.40	14.85	12.65	15.04	57.94
1851....	0.82	5.69	2.56	7.24	1.34	1.53	4.44	2.58	1.22	4.02	4.31	2.45	14.14	8.55	9.55	8.86	40.60
1852....	1.80	3.80	2.63	4.66	1.85	2.30	4.67	6.39	2.39	2.99	4.47	5.31	9.19	13.36	9.85	10.91	49.31
1853....	3.27	5.45	3.23	5.84	7.99	3.77	10.48	7.87	3.95	3.85	5.60	2.26	17.06	22.12	13.40	10.98	63.56
1854....	3.52	5.64	2.81	10.73	5.08	1.62	3.73	0.46	4.00	1.98	5.65	2.64	18.42	5.81	11.63	11.20	47.06
Mean of 19 years	3.50	3.44	3.71	4.55	6.18	4.79	5.50	5.15	3.89	4.34	4.39	4.71	14.44	15.44	12.62	11.65	54.15
Mean last 12 years	3.24	3.90	3.62	3.82	5.13	2.77	4.89	4.77	3.11	3.87	3.76	3.65	12.57	12.43	10.74	10.79	46.53

## WATERVLIET ARSENAL, NEW YORK.

1836....	....	....	....	2.21	2.42	7.68	2.89	2.00	0.99	4.15	2.58	4.53	.....	11.47	7.72	.....	.....
1837....	2.49	2.82	2.17	1.34	6.11	4.73	2.92	3.21	1.15	2.12	0.80	1.45	9.65	11.56	4.07	6.76	32.04
1838....	0.83	1.02	1.25	0.63	4.69	4.87	2.67	5.95	2.96	2.56	3.32	0.55	6.57	12.99	8.84	2.40	30.80
1839....	2.20	0.65	1.30	2.63	2.91	4.60	3.61	1.03	3.67	1.22	2.51	2.10	7.84	9.24	7.70	4.95	29.73
1840....	0.27	0.20	2.79	4.69	1.95	3.45	2.54	2.96	4.72	4.24	2.95	1.61	9.34	8.95	11.91	2.08	32.28
1841....	3.69	2.20	2.50	4.34	1.75	3.09	1.68	4.25	5.44	1.41	2.89	3.15	8.59	8.42	9.74	9.04	35.79
1842....	0.95	3.28	3.47	4.93	1.37	4.98	5.03	4.36	7.69	4.18	2.36	....	9.77	14.37	14.23	.....	.....
1843...	1.90	....	1.30	4.26	3.25	6.05	4.39	7.02	2.61	4.83	2.75	1.60	8.81	17.46	10.39	.....	.....
1845....	4.25	2.95	3.56	3.25	5.62	2.69	3.31	1.19	3.12	2.04	3.41	2.55	11.63	6.59	8.57	9.75	36.54
1846....	2.86	2.20	2.85	0.86*	3.29	2.96	2.50*	2.90	1.10	2.16	5.00	2.51	7.00	8.86	8.26	7.57	31.49
1847....	1.84	1.83	2.50	2.23	2.45	3.52	6.01	1.74	3.06	3.16	1.97	1.64	7.18	11.57	8.19	4.66	31.60
1848....	2.02	2.27	3.22	1.40	6.61	3.62	5.57	2.98	2.25	3.44	2.23	4.32	11.23	11.87	7.92	8.61	39.13
1849....	0.65	....	1.19?	1.01	5.53	5.52	....	....	0.67	5.34	1.61	2.98	7.73	.....	7.62	.....	.....
1850....	1.80	0.40	0.84	2.92	4.70	1.91	5.27	3.34	4.23	3.37	1.69	2.75	8.46	10.52	9.29	4.96	33.28?
1851....	1.32	3.86	0.97	3.53	2.53	3.60	4.43	2.39	1.66	2.62	4.01	2.56	7.03	10.42	8.29	8.04	34.03
1852....	2.88	1.10	2.06	4.16	1.67	1.28	2.87	2.73	2.67	2.67	4.70	2.35	7.89	6.88	10.04	6.33	31.14
1853....	1.78	4.08	2.72	3.36	5.84	1.62	3.54	3.05	7.56	2.47	5.37	1.43	11.92	8.21	15.40	7.29	42.82
1854....	3.50	2.77	2.73	3.98	1.53	2.31	1.54	0.54	2.82	2.05	2.40	0.98	8.29	4.69	7.27	7.25	27.50
Mean ..	2.07	2.88	2.19	2.92	3.55	3.73	3.51	3.10	3.24	3.00	2.93	2.33	8.66	10.34	9.17	6.33	34.55

\* This series is generally incomplete in measurement of water falling as snow. A series of twenty years' observation at Albany gives 40 inches as the mean annual fall of water.

## PLATTSBURG BARRACKS, NEW YORK.

1840....	1.10	0.20	5.05	5.23	2.50	2.75	3.00	4.50	6.25	1.10	2.00	2.00	12.80	10.25	9.35	3.30	35.70
1841....	2.00	0.81	1.25	....	....	....	1.75	1.50	3.46	0.50	1.47	2.44	.....	.....	5.43	5.23	.....
1842....	0.47	1.82	2.49	2.23	0.80	2.23	4.09	2.41	3.69	3.34	2.54	3.12	5.46	8.78	9.87	4.91	29.02
1843....	1.26	1.46	2.83	1.43	4.88	5.43	5.09	5.22	4.47	4.88	3.08	0.74	11.54	15.79	12.43	3.66	43.72
1844....	0.84	0.54	2.44	2.61	5.40	4.41	1.78	6.46	3.35	4.53	2.40	1.52	10.45	15.65	10.28	2.90	39.28
1845....	2.84	2.67	2.19	2.02	1.83	2.15	2.69	1.31	3.66	2.26	3.49	1.20	5.94	5.55	9.41	6.73	27.63
1846....	1.13	0.74	1.86	0.62	2.91	3.11	....	....	....	....	....	....	4.89	.....	.....	.....	.....



PLATTSBURG BARRACKS, NEW YORK—Continued.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1849....	.....	.....	.....	.....	.....	.....	0.95	3.60	0.70	4.20	2.20	1.20	.....	.....	7.20	.....	.....
1850....	1.10	0.93	0.28	3.78	7.13	2.58	4.12	1.28	4.56	7.64	3.10	7.25	11.19	8.03	15.30	9.33	49.90
1851....	2.19	1.99	2.03	1.61	3.61	5.35	3.69	3.22	3.30	4.61	3.30	1.84	7.25	11.66	11.27	6.02	58.20
1852....	0.90	1.83	2.62	3.42	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean...	1.38	1.20	2.13	2.53	3.63	3.51	3.22	3.30	3.72	3.67	2.66	2.37	8.36	10.03	10.65	4.95	33.89

Mean of eighteen years' observation at Burlington, Vermont, 33.9 inches.—Professor Thompson.

MADISON BARRACKS, NEW YORK.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1840....	1.15	3.53	2.58	.....	.....	.....	.....	4.80	3.62	3.73	3.16	2.55	.....	.....	10.56	7.53	.....
1841....	3.18	0.51	3.00	2.73	1.74	1.58	4.14	1.59	5.35	1.58	3.85	3.11	7.47	7.31	10.79	6.80	32.37
1842....	0.94	1.93	3.24	3.16	1.76	4.43	3.81	3.88	4.21	4.11	4.33	1.96	8.16	11.62	12.70	4.83	37.31
1843....	2.35	1.85	2.57	2.15	1.44	4.70	2.79	1.85	2.66	6.91	2.44	2.66	6.16	9.34	12.01	6.26	33.77
1844....	2.74	0.85	1.91	1.79	3.37	3.74	3.73	3.80	0.41	3.52	1.62	1.70	7.07	11.32	5.55	5.29	29.25
1845....	3.50	2.92	2.55	2.04	4.16	1.85	5.45	0.57	3.18	2.64	2.24	1.27	8.75	7.87	8.06	7.69	32.37
1846....	2.61	2.24	2.23	1.96	3.49	1.95	.....	.....	.....	.....	.....	.....	7.73	.....	.....	.....	.....
1849....	.....	.....	.....	.....	1.89	2.07	0.91	4.06	6.51	5.21	4.99	4.55	.....	7.04	16.71	.....	.....
1850....	3.16	3.55	2.13	2.87	6.15	1.64	7.57	3.12	4.75	12.39	3.93	6.26	11.15	12.33	21.07	12.97	57.11?
1851....	2.39	4.52	4.33	3.95	5.03	2.78	7.67	3.53	3.35	6.09	5.83	4.25	13.36	13.93	15.29	11.16	53.79?
1852....	2.90	2.79	5.89	3.29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean ..	2.49	2.47	3.05	2.66	3.23	2.75	4.51	2.97	3.73	5.13	3.60	3.14	8.94	10.23	12.51	8.19	39.73

The last years of this record appear over-measured, by comparison with other stations and with previous summaries here.

FORT ONTARIO, NEW YORK.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1844....	1.43	0.19	1.54	1.40	3.74	3.20	1.42	6.50	0.54	4.89	1.02	3.71	6.63	16.12	6.45	5.83	34.53
1845....	3.01	2.63	0.85	2.43	2.39	4.73	1.58	.....	3.63	5.60	2.65	3.62	5.62	.....	11.83	9.31	.....
1846....	2.30	2.93	1.53*	1.29	1.82	1.33	.....	.....	.....	.....	.....	.....	4.66	.....	.....	.....	.....
1849....	1.16	1.15	2.62	1.65	3.00	1.66	0.69	1.61	2.26	6.30	2.77	2.09	7.27	3.96	11.83	5.40	27.96
1850....	1.63	1.63	0.37	3.39	3.04	2.03	6.09	1.25	2.40	5.59	4.81	2.90	6.80	7.37	12.80	5.66	32.63
1851....	2.61	2.31	3.97	1.91	1.31	2.55	2.37	1.32	1.74	2.43	4.97	4.41	7.19	6.44	9.19	9.33	32.15
1852....	2.76	2.14	3.66	0.68	0.86	4.06	1.13	0.53	3.31	4.80	4.47	4.69	5.20	5.77	12.53	8.99	32.34
1853....	1.17	4.12	0.89	3.04	2.01	0.72	.....	.....	.....	.....	.....	.....	5.94	.....	.....	.....	.....
1854....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.82	1.09	1.69	.....	.....	.....	.....	.....
Mean...	2.02	2.07	1.93	1.93	2.27	3.17	2.22	2.24	2.31	4.85	3.11	3.21	6.13	7.63	9.77	7.30	30.53

FORT NIAGARA, NEW YORK.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1841....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.77	1.20	3.40	.....	.....	.....	.....	.....
1842....	2.50	3.90	4.10	4.20	2.40	7.25	6.02	3.59	5.65	3.70	4.82	2.75	10.70	17.07	13.57	9.13	50.49
1843....	5.61	2.27	2.74	2.31	2.39	5.67	4.23	1.49	4.72	2.24	1.54	1.36	7.94	11.39	8.80	9.34	37.07
1844....	1.80	0.53	1.52	0.84	2.74	2.59	2.23	2.26	0.26	1.47	0.24	1.63	5.10	7.13	2.27	3.96	13.86?
1845....	1.75	1.17	1.94	2.07	2.57	1.16	1.14	2.81	3.66	1.42	1.21	0.31	6.53	5.11	5.69	3.23	20.61?
1846....	1.90	1.13	1.20	1.03	2.03	1.62	.....	.....	.....	.....	.....	.....	4.86	.....	.....	.....	.....

FORT NIAGARA, NEW YORK—Continued.

	Jan.	Feb.	March	April	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.	Spring	Summer	Autumn	Winter	Year.
1849....	....	....	....	....	....	....	2.63	7.21	5.00	4.14	3.65	2.91	.....	.....	12.79	.....	.....
1850....	4.01	0.67	0.49	0.46	4.70	6.64	6.87	5.17	7.35	3.10	3.06	1.82	1.65	13.18	13.41	6.59	89.74
1851....	1.20	3.32	0.37	2.01	2.49	1.69	3.18	2.26	2.99	2.58	2.40	1.42	4.87	7.13	7.97	5.94	25.91
1852....	1.00	1.71	4.46	2.87	2.56	2.91	1.93	2.60	5.06	3.30	2.62	5.97	9.89	7.49	10.93	8.63	37.04
1853....	1.11	1.64	2.54	3.40	3.70	1.60	2.71	1.56	3.55	1.31	2.18	1.17	9.64	5.87	7.04	3.92	26.47
1854....	1.63	2.52	1.87	2.25	3.90	1.71	4.03	1.52	2.61	....	....	....	8.02	7.26	.....	.....	.....
Mean ..	2.25	1.89	2.12	2.20	2.55	3.28	3.49	3.04	3.95	2.37	2.36	2.27	6.87	9.81	8.68	6.41	31.77

\* Twelve days.

BUFFALO BARRACKS, NEW YORK.

1842....	....	....	....	....	....	....	2.10	2.00	7.50	2.50	6.20	2.40	.....	.....	16.20	.....	.....
1843....	3.52	1.70	3.28	3.51	1.65	2.86	3.77	2.90	7.10	7.76	3.27	3.38	8.44	9.53	18.13	8.60	44.70
1844....	2.40	0.64	3.06	1.55	5.05	3.50	4.77	5.34	0.22	3.90	2.16	2.20	9.66	13.61	6.23	5.24	34.79
1845....	4.08	2.29	2.91	2.70	1.73	1.96	1.54	....	....	....	....	....	7.39	.....	.....	.....	.....
Mean ..	3.33	1.54	3.08	2.59	2.83	2.77	3.05	3.41	4.94	4.72	3.83	2.66	8.59	9.23	13.54	7.53	38.80

ALLEGHENY ARSENAL, PENNSYLVANIA.

1836....	....	....	....	....	....	....	....	3.28	1.55	2.04	1.59	2.18	.....	.....	5.18	.....	.....
1837....	2.66	2.27	1.27	1.00	4.64	7.50	1.70	2.52	1.77	3.93	3.71	2.69	6.91	11.72	9.41	7.62	35.66
1838....	1.29	1.94	1.59	....	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....
1839....	1.40	1.80	1.76	1.50	2.08	2.55	2.40	1.50	3.75	0.60	2.70	3.23	5.64	6.45	7.05	6.08	25.62
1840....	1.33	1.33	3.47	2.18	2.93	3.70	1.57	3.59	2.12	2.63	1.71	1.73	8.58	9.16	6.51	4.39	29.64
1841....	2.74	0.07	4.77	3.82	2.40	4.96	1.73	4.01	1.85	2.31	2.77	3.41	10.99	10.70	6.93	6.22	34.84
1842....	2.75	2.88	3.75	4.64	2.86	3.96	4.99	5.91	2.20	2.09	1.72	3.79	11.25	14.86	6.01	9.42	41.54
1843....	2.70	3.31	3.27	2.33	4.65	3.83	1.87	2.32	6.44	3.16	2.87	2.26	10.65	8.02	12.77	8.27	39.71
1844....	2.20	0.93	3.04	1.79	4.89	4.02	2.11	4.47	2.57	2.85	1.85	1.50	9.72	10.93	7.27	4.63	32.55
1845....	2.65	1.50	3.04	2.51	1.13	4.04	3.74	3.66	3.39	3.37	2.02	1.19	6.73	10.84	8.78	5.54	31.89
1846....	2.92	2.73	2.02	3.76	4.62	4.05	7.15	6.05	1.95	4.78	2.60	5.16	10.40	17.25	9.33	10.81	47.79
1847....	3.01	2.86	3.17	2.55	3.64	5.32	4.18	3.26	3.92	4.76	4.27	4.98	9.66	12.76	12.95	10.85	46.22
1848....	1.31	0.50	3.20	2.45	5.51	3.03	3.69	2.27	2.08	2.11	3.11	4.83	11.16	8.99	7.30	6.09	34.14
1849....	2.43	1.31	3.85	0.83	5.83	2.84	1.26	3.26	1.26	3.86	3.97	4.11	10.51	7.36	9.09	7.85	34.51
1850....	3.76	3.45	2.74	2.59	3.30	2.62	2.82	1.27	3.62	4.29	2.19	4.76	8.63	6.71	10.10	11.97	37.41
1851....	0.35	3.01	1.43	2.83	3.57	2.04	4.30	2.66	2.62	1.45	3.67	1.71	7.83	9.00	7.74	5.17	29.74
1852....	1.50	3.34	2.03	9.27	3.84	2.76	2.55	2.76	3.09	2.24	2.67	5.01	15.11	8.07	8.00	10.15	41.36
1853....	1.56	3.53	1.11	4.16	3.27	1.32	2.74	6.56	2.34	2.04	2.90	2.10	8.54	10.62	7.23	7.19	33.63
1854....	2.23	2.33	2.82	4.21	2.24	2.06	1.45	1.13	1.76	2.89	1.88	1.67	9.27	4.64	6.53	6.23	26.67
Mean ..	2.13	2.17	2.70	3.10	3.53	3.56	2.97	3.34	2.63	2.87	2.63	3.13	9.33	9.87	8.23	7.48	34.96

CARLISLE BARRACKS, PENNSYLVANIA.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1848....	....	....	....	0.95	2.25	2.50	8.79	1.95	2.10	3.28	2.73	4.76	.....	13.24	8.11	.....	.....
1849....	1.09	1.31	3.84	0.63	3.16	1.72	0.45	1.43	0.96	4.43	0.84	3.83	7.68	3.60	6.43	6.23	23.94
1850....	4.28	2.76	3.70	2.38	4.83	3.88	8.90	2.72	5.65	4.03	0.87	3.51	10.91	15.00	10.60	10.85	47.36
1851....	0.51	3.00	2.25	4.76	3.41	4.30	3.89	1.49	1.95	1.18	3.73	....	10.52	9.68	6.86	.....	.....
1852....	1.18	2.23	3.96	4.69	2.96	3.36	8.51	4.38	1.45	1.64	6.27	3.61	11.61	11.25	9.36	7.62	69.24
1853....	1.26	2.73	0.75	3.02	3.69	0.51	2.63	2.63	3.01	....	....	....	7.46	6.07	.....	.....	.....
1854....	....	....	....	....	....	....	....	1.19	0.78	0.232	2.39	1.63	.....	.....	4.01	.....	.....
Mean..	1.67	2.41	2.92	2.75	3.38	2.68	4.69	2.30	2.27	2.62	2.79	3.53	9.65	9.67	7.68	7.61	34.01

FORT MIFFLIN, PENNSYLVANIA.

1843...	1.98	1.92	4.45	1.53	3.16	1.74	1.01	6.03	4.95	2.84	1.08	4.30	9.19	11.78	11.87	8.20	41.04
1844...	5.60	2.00	4.15	2.15	3.82	4.90	4.20	2.80	4.30	6.00	4.00	2.90	10.12	11.90	14.30	10.50	46.82
1849...	0.71	2.69	6.05	1.64	4.04	2.26	2.16	7.36	0.48	6.52	2.25	6.18	11.73	11.78	9.25	9.58	42.34
1850...	4.29	2.52	5.39	2.93	7.65	1.65	5.23	6.84	8.45	1.54	....	4.66	16.02	13.72	.....	11.47	.....
1851...	1.25	4.03	5.60	3.55	4.65	3.00	3.65	3.03	0.94	3.03	3.41	1.90	13.50	9.68	7.88	7.18	38.84
1852...	2.40	2.48	4.69	8.20	5.30	4.55	5.45	4.40	1.40	3.30	3.80	5.45	18.10	14.40	8.50	10.33	51.33
1853....	0.80	3.54	2.20	3.98	5.70	2.00	8.71	4.42	1.80	2.84	....	....	11.88	15.13	.....	.....	.....
Mean..	2.43	2.69	4.63	3.44	4.90	2.87	4.77	4.98	3.19	3.72	3.51	4.23	12.97	12.62	10.42	9.26	45.27

Mean of 25 years at Pennsylvania Hospital, Philadelphia, by Drs. Swift and Conrad, 42.3 inches.

FORT McHENRY, MARYLAND.

1836....	....	....	....	....	4.10	9.20	2.85	6.70	3.15	4.00	4.80	7.10	.....	18.25	11.95	....	.....
1837....	2.10	3.10	6.30	2.10	4.20	4.90	4.50	5.10	3.80	3.10	3.40	2.60	12.60	14.30	10.30	7.80	45.00
1838....	2.10	2.90	4.50	2.80	4.30	4.70	1.90	9.10	4.50	3.10	2.70	4.50	11.60	15.70	10.30	9.50	47.10
1839...	3.50	3.60	4.00	9.10	4.50	4.10	5.60	2.20	1.90	1.60	2.80	8.80	17.60	11.90	6.30	15.90	51.70
1840....	2.30	2.30	2.70	4.30	3.90	5.10	1.85	2.35	2.80	4.50	2.15	3.25	10.90	9.30	9.45	7.85	37.90
1841....	6.10	1.40	5.95	4.50	2.75	4.35	1.35	1.00	2.30	2.80	3.30	5.10	15.10	9.70	8.40	12.60	43.90
1842....	1.80	3.35	2.40	4.30	4.00	2.65	3.70	1.40	1.00	1.40	2.75	3.35	10.70	10.75	5.15	8.50	35.18
1843...	1.60	2.20	3.80	2.90	3.55	0.90	5.40	7.52	10.50	1.97	4.25	3.90	10.25	14.12	16.72	7.70	48.79
1844....	3.60	1.45	5.00	1.60	4.00	1.70	3.90	0.31	4.47	3.03	1.55	3.50	8.60	5.91	9.35	8.60	32.46
1845....	2.40	3.50	1.70	1.49	2.93	2.93	1.26	2.77	1.51	3.73	1.22	3.43	5.55	6.96	6.46	9.42	28.39
1846....	2.83	1.82	3.54	2.35	5.77	1.73	6.89	7.29	3.88	1.30	7.17	2.10	11.69	15.87	12.35	6.75	46.66
1847....	2.92	3.42	2.33	0.41	1.19	3.06	2.51	2.97	5.55	3.83	2.54	2.38	3.98	8.84	11.47	9.72	34.01
1848....	1.58	0.94	2.70	0.51	2.96	4.24	4.42	3.24	1.64	7.35	1.44	3.10	6.47	11.90	10.43	5.62	34.42
1849....	1.02	1.15	3.63	0.87	4.18	1.50	2.06	2.55	1.90	6.27	1.06	4.44	8.68	6.11	9.23	6.61	30.63
1850....	3.58	2.43	5.90	3.85	3.03	1.66	3.10	4.70	4.70	8.10	4.30	4.40	12.83	9.46	12.10	10.41	43.80
1851....	1.70	2.90	5.70	4.70	4.60	1.30	4.20	3.30	0.50	2.20	5.60	1.50	15.00	8.79	8.30	6.10	38.10
1852....	2.60	3.60	3.90	7.50	1.70	2.70	5.70	4.60	2.20	2.60	7.90	6.20	13.40	13.00	12.70	12.40	51.50
1853....	1.30	3.40	2.70	3.10	4.30	0.60	3.30	4.70	2.40	4.40	3.50	2.30	10.10	8.60	10.30	7.00	36.00
1854*..	4.40	4.90	4.70	7.20	5.20	4.80	2.60	3.00	4.10	7.10	7.30	3.90	17.10	10.40	18.50	13.20	59.202
Mean..	2.61	2.70	3.86	3.56	3.71	3.23	3.50	4.25	3.31	3.53	3.68	3.97	11.13	11.04	10.52	9.31	42.00

\* 1854 and 1845 appear inaccurately measured, one in excess and the other in deficiency. Their errors are compensating.



FORT SEVERN, MARYLAND.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1843....	.....	.....	3.00	2.50	5.71	1.24	6.28	5.99	10.37	2.64	4.96	4.26	11.30	13.51	17.97	.....	.....
1844....	4.22	0.94	3.55	1.08	4.69	3.91	2.96	1.67	6.47	4.28	3.62	3.37	9.32	8.54	14.37	5.53	40.76
1845....	3.69	5.10	2.85	2.25	3.24	6.94	3.18	....	....	....	....	....	5.84	.....	.....	.....	.....
Mean ..	3.96	3.02	3.13	1.97	4.55	4.03	4.14	3.83	5.42	3.46	4.29	3.51	9.65	12.00	16.17	10.79	48.61

WASHINGTON CITY.

1824....	1.50	2.65	1.93	4.80	1.58	4.26	2.45	2.43	2.62	1.23	1.24	2.76	7.86	9.14	5.09	6.91	29.00
1825....	1.62	2.27	3.83	3.35	2.37	2.66	1.57	1.35	0.45	1.68	0.24	2.76	9.55	5.88	2.37	6.65	24.45
1826....	0.60	2.01	1.63	0.45	0.50	1.57	2.66	2.37	1.60	1.03	2.05	1.62	2.93	6.90	4.73	4.23	18.79
1827....	0.48	2.55	1.18	1.97	2.25	1.37	....	....	....	1.02	2.57	2.21	5.40	.....	.....	5.54	.....
Mean ..	1.05	2.45	2.17	2.52	1.75	2.54	2.25	2.05	1.56	1.25	1.52	2.34	6.44	6.86	4.38	5.84	23.47
1836....	.....	.....	.....	.....	.....	.....	..	....	....	....	....	....	.....	.....	.....	.....	47.27
1837....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31.50
1838....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25.10
1839....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	36.97
1838 to 1842.	4.46	2.74	2.56	4.03	3.86	2.92	3.92	3.69	3.52	3.55	3.08	2.87	10.45	10.58	10.15	10.07	41.20

These observations are reported in the first publications of results from the medical department. The first were taken by Rev. Robert Little, and those from 1836 to 1839 by Judge Cranch. Later observations show the quantity of rain falling here to differ little from that at Baltimore, and the evidences are strong that the first series was much under-measured. The last amount is from the observations of Lieutenant Gilliss, and is a mean of measurements from July, 1838, to June, 1842, giving a close approximation to the absolute mean.

FORT WASHINGTON, MARYLAND.

1851....	.....	.....	.....	.....	3.77	1.42	4.92	3.51	2.27	1.95	3.66	1.73	.....	9.85	7.88	.....	.....
1852....	1.54	3.23	2.53	7.05	2.29	3.51	2.89	11.54	1.75	2.20	6.90	4.64	12.22	17.94	10.85	9.41	50.42
1853....	3.19	4.40	3.47	3.56	6.23	1.56	3.88	3.30	4.57	....	....	.....	13.26	10.74	.....	.....	.....
Mean ..	2.37	3.81	3.17	5.30	4.10	2.16	3.90	6.78	2.96	2.08	5.28	3.21	12.57	12.54	10.22	9.39	45.02

FORT MONROE, VIRGINIA.

1836....	.....	.....	.....	.....	.....	.....	6.30	5.20	0.51	2.70	4.70	3.40	.....	.....	8.21	.....	.....
1837....	1.60	2.50	2.40	0.90	2.20	3.50	2.00	7.50	5.70	0.50	2.90	9.00	5.50	13.00	9.10	13.10	40.70
1838....	2.74	1.85	2.10	2.50	1.10	4.50	2.40	1.15	16.40	4.60	3.70	1.60	6.00	8.05	24.70	6.19	44.94
1839....	8.10	4.70	5.80	3.70	5.50	4.50	4.50	14.20	1.20	6.80	3.60	9.60	14.50	23.50	11.60	22.40	72.00
1840....	1.60	3.20	4.00	5.90	5.91	11.10	13.50	5.50	7.60	6.40	2.80	6.60	15.81	30.10	16.80	11.40	74.10
1841....	11.00	3.20	8.50	6.80	4.20	3.60	3.61	8.90	6.40	1.50	2.50	5.60	19.00	16.11	10.40	19.80	65.30
1842....	5.10	5.60	2.46	5.50	4.70	9.50	13.50	8.30	1.20	3.50	4.10	3.60	12.66	31.30	8.80	14.30	67.06
1843....	0.51	4.00	3.30	3.10	6.20	2.20	3.70	8.60	3.20	4.50	2.20	5.50	12.60	14.50	9.90	10.31	47.31
1844....	3.40	1.50	4.50	1.41	2.92	4.85	3.58	8.00	4.76	2.25	3.74	3.77	8.83	13.43	10.75	8.67	41.68
1845....	1.88	2.42	1.20	2.48	7.70	6.06	3.26	9.98	4.65	2.00	2.10	4.04	11.38	19.30	8.75	8.34	47.77
1846....	3.55	2.97	3.33	3.28	4.36	4.67	5.27	2.48	5.31	2.03	9.35	3.14	10.97	12.42	17.34	9.66	50.39
1847....	2.75	2.65	5.05	1.56	3.62	4.07	3.47	8.93	7.87	1.92	4.10	2.64	10.53	16.47	13.89	8.04	48.93
1848....	0.77	3.20	3.18	1.89	3.68	1.67	4.19	3.47	9.85	4.13	1.80	2.21	8.25	8.78	6.28	6.16	29.44

## FORT MONROE, VIRGINIA—Continued.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter	Year.
1849....	1.70	2.10	4.06	0.98	3.11	0.70	4.13	1.98	1.99	2.91	4.86	4.12	8.15	6.81	9.76	7.92	32.64
1850....	4.32	2.20	3.04	2.47	3.24	1.12	18.01	3.27	2.31	0.76	1.92	7.10	8.75	22.40	4.99	13.62	49.76
1851....	3.21	2.24	2.23	1.33	2.20	2.51	3.00	4.00	0.76	2.02	2.45	0.91	5.76	9.51	5.23	6.36	26.86
1852....	0.90	1.18	1.82	2.72	1.53	1.89	3.83	4.90	1.55	1.92	2.06	2.94	6.07	10.62	5.53	5.05	27.27
1853....	1.54	1.90	1.41	2.47	2.08	0.56	5.79	1.93	1.11	0.80	5.25	1.90	5.96	8.28	7.16	5.34	26.74
1854....	4.00	1.90	2.00	1.80	0.82	1.30	1.60	0.60	1.00	1.80	1.30	1.20	4.62	3.50	4.10	7.10	19.32
Mean.	3.48	3.01	3.74	3.01	4.17	4.41	6.10	6.29	4.68	3.61	3.58	4.81	10.92	16.80	11.87	11.30	50.89
	3.26	2.74	3.33	2.80	3.64	3.78	5.56	5.70	3.93	2.82	3.41	4.17	9.77	15.08	10.16	10.17	45.18

The measurements of rain at *Fort Monroe* for the last four years differ so widely from those of previous years as to lead to the inference that the gauge is defective or that the observations were inaccurate. The first summary is of observations previous to 1851.

## FORT JOHNSTON, NORTH CAROLINA.

1844....	3.40	1.50	4.00	0.70	1.57	3.28	8.43	7.90	9.86	2.42	4.04	2.95	6.27	19.61	16.32	7.85	50.05
1845....	1.85	2.00	2.99	0.48	3.94	1.61	1.93	....	....	....	....	....	7.41	....	....	....	....
Mean..	2.64	1.75	3.49	0.59	2.75	2.44	5.18	7.90	9.86	2.42	4.04	2.95	6.83	15.52	16.32	7.34	46.01

## FORT MOULTRIE, SOUTH CAROLINA.

1842....	....	....	....	....	....	....	....	....	....	....	2.86	3.45	....	....	....	....	....
1843....	2.07	2.09	10.52	0.02	2.38	3.24	5.54	7.76	5.39	0.63	0.55	2.61	12.92	16.52	6.59	6.77	42.80
1844....	2.66	1.69	4.07	1.20	1.87	1.51	4.85	4.32	6.05	0.91	3.40	1.45	7.14	10.68	10.36	5.80	33.98
1845....	3.42	0.95	1.95	0.10	6.53	2.19	6.05	5.90	2.60	7.55	0.20	6.07	8.58	14.14	10.35	10.44	43.51
1846....	4.97	3.51	5.50	3.35	1.90	3.25	4.60	9.05	3.20	....	0.33	1.35	10.75	16.90	....	9.83	....
1847....	1.69	0.20	7.66	1.52	9.45	5.50	13.25	14.70	6.64	0.00	0.45	4.25	18.63	33.45	7.09	6.14	65.31
1848....	0.75	5.85	1.75	3.80	7.10	7.85	5.85	6.32	9.40	5.25	1.25	1.70	12.65	20.02	15.90	8.30	56.87
1849....	0.25	1.45	1.50	0.50?	4.60	2.60	7.60	10.80	4.70	3.99	0.71	1.08	6.60	21.00	9.40	2.78	39.78
1850....	2.95	2.83	6.01	2.59	4.10	0.78	2.32	4.03	2.68	0.88	1.99	4.64	12.70	7.13	5.55	10.42	35.80
1851....	3.67	2.51	1.93	1.65	0.63	8.25	8.57	5.89	0.29	1.28	3.34	1.10	4.21	22.74	4.91	7.28	39.11
1852....	0.51	1.21	4.35	2.96	4.17	8.86	5.43	4.15	11.70	1.20	2.12	4.60	11.48	18.44	15.02	6.32	51.26
1853....	1.90	2.80	3.30	1.06	2.53	1.53	10.88	2.20	8.10	4.05	4.89	2.39	6.89	14.63	17.04	7.09	45.63
1854....	3.80	2.84	0.25	2.20	3.70	4.20	5.69	3.82	9.24	1.12	1.16	1.74	6.15	13.71	11.52	8.38	39.76
Mean...	2.39	2.33	4.06	1.75	4.08	4.15	6.72	6.58	5.83	2.44	1.79	2.80	9.89	17.45	10.06	7.52	44.92

## AUGUSTA ARSENAL, GEORGIA.

1844....	....	....	...	....	0.57	1.41	1.24	0.53	2.34	0.27	1.88	1.76	....	3.18	4.49	....	...
1845....	1.90	0.62	0.78	0.05	1.07	1.20	0.35	2.62	0.53	3.51	0.50	6.00	1.90	4.17	4.54	8.52	19.13?
1846....	3.59	4.25	8.60	2.89	....	....	....	....	....	....	....	....	....	....	....	....	....
Mean...	2.74	2.43	4.69	1.47	0.82	1.30	0.79	1.57	1.43	1.89	1.19	3.88	6.78	3.66	4.51	8.05	23.00

## OGLETHORPE BARRACKS, GEORGIA.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1843....	1.27	2.03	12.51	0.84	2.01	5.69	5.33	7.16	1.54	0.60	0.96	3.57	15.36	18.18	3.10	4.26	40.90
1844....	3.61	1.10	8.77	3.07	2.47	8.19	13.92	4.10	6.08	0.57	2.78	2.90	14.31	26.21	9.43	7.61	57.56
1845....	2.85	0.05	2.21	0.20	5.30	2.37	2.80	9.94	2.21	5.94	0.22	3.96	7.71	15.11	8.37	6.06	38.05
1846....	6.54	4.70	5.06	3.72	1.36	5.81	7.08	6.44	7.17	....	....	....	10.14	19.33	.....	.....	.....
1850....	....	3.03	7.00	6.72	6.00	1.20	14.80	12.67	3.37	0.70	0.80	3.27	19.72	28.67	4.87	.....	.....
Mean...	3.57	2.18	7.11	2.91	3.43	4.65	8.79	8.06	4.07	1.95	1.19	3.42	13.45	23.50	7.21	9.17	53.33

## FORT MARION, ST. AUGUSTINE, FLORIDA.

1844....	1.94	1.00	4.71	1.26	2.97	2.18	2.37	2.68	7.13	0.49	0.73	1.55	8.94	8.13	8.35	4.49	29.91
1845....	1.98	0.50	2.05	0.60	2.63	0.59	4.11	....	4.81	6.06	0.43	3.08	5.28	.....	11.31	5.56	.....
1846....	4.13	4.32	1.67	1.70	1.77	6.28	....	....	....	....	....	....	5.14	.....	.....	.....	.....
1851....	....	1.71	0.93	2.68	0.64	8.01	3.23	3.38	5.60	0.71	2.72	1.60	4.25	14.62	9.03	.....	.....
1852....	0.32	0.59	....	....	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....
Mean...	2.09	1.63	2.34	1.56	2.00	4.27	3.24	3.03	5.85	2.42	1.29	2.08	5.90	10.54	9.56	5.80	31.80

## FORT SHANNON, FLORIDA.

1841*...	0.49	1.30	6.17	3.60	2.00	8.45	5.80	11.32	6.50	4.29	2.56	1.65	11.77	25.57	13.25	3.44	54.13
1842....	0.43	2.84	1.02	1.70	4.49	5.87	10.55	6.30	4.99	4.67	1.97	0.84	7.21	22.72	11.63	4.11	45.67
1843....	1.87	3.79	14.28	2.12	2.09	5.31	5.70	5.18	1.50	2.39	0.28	1.76	15.39	16.19	4.17	7.42	43.17
Mean...	0.93	2.64	7.16	2.47	2.86	6.54	7.35	7.60	4.33	3.78	1.60	1.42	12.49	21.49	9.71	4.99	48.68

\* January and February at *Fort Reid*, a few miles distant.

## FORT PIERCE, (CAPRON,) FLORIDA.

1853....	....	0.42	1.73	0.63	1.14	2.75	7.23	4.47	3.15	2.46	....	....	3.50	14.45	.....	.....	.....
1852....	....	....	3.05	4.80	1.30	6.85	8.00	4.30	7.00	0.60	1.82	2.30	9.15	19.15	9.42	.....	.....
1853....	5.00	2.20	5.15	2.45	4.55	29.35	2.50	13.50	17.50	10.00	3.41	0.75	12.15	45.35	41.00	7.98	106.48
1854....	3.55	3.40	1.05	7.00	5.70	6.63	4.97	2.63	3.30	5.47	1.41	1.68	13.75	14.23	10.18	8.63	46.79
1855....	4.81	2.56	2.80	1.14	5.54	....	....	....	....	....	....	....	9.49	.....	.....	.....	.....
Mean...	4.45	2.72	3.01	3.85	4.27	14.28	5.16	6.81	9.27	5.36	2.21	1.59	11.13	26.25	16.84	8.76	62.98

The first quantities given for 1853 are at *New Smyrna*, and are not included in the summary.

## KEY WEST, FLORIDA.

1837....	1.83	0.92	0.75	2.42	5.35	1.68	1.65	7.50	5.80	6.05	3.05	1.65	8.52	10.83	14.90	4.40	38.65
1838....	0.05	0.05	0.00	0.02	0.82	4.86	1.15	3.05	3.47	0.40	5.75	0.87	0.84	9.06	9.62	0.97	20.49
1844....	...	1.23	0.13	0.05	1.36	7.13	1.26	2.63	8.50	14.07	0.44	1.28	1.54	11.02	23.01	2.51	38.08
1845....	4.42	0.14	3.67	2.06	4.33	6.07	5.00	....	....	....	....	....	10.10	.....	.....	.....	.....
1850....	....	....	....	....	....	....	2.02	3.38	3.93	4.18	0.01	2.10	.....	.....	7.32	.....	.....
1851....	2.40	0.48	1.50	1.80	5.32	9.24	3.24	6.80	14.00	9.45	2.30	2.64	8.62	19.28	25.75	5.92	59.57



KEY WEST, FLORIDA—Continued.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1852....	1.82	3.67	8.74	2.17	0.40	8.51	6.16	6.03	6.22	4.18	3.00	3.41	11.31	20.70	13.40	8.90	54.31
1853....	2.80	0.35	12.06	....	0.94	18.11	2.33	5.02	4.39	1.69	1.08	0.89	.....	25.46	7.16	4.04	.....
1854....	1.77	2.55	0.51	2.99	3.14	4.54	3.45	5.83	9.70	4.73	0.25	8.45	6.64	13.82	14.68	12.77	47.91
1855....	3.94	0.83	2.87	0.24	3.55	4.47	....	....	....	....	....	....	6.66	.....	.....	.....	.....
Mean...	2.86	1.38	4.21	1.55	2.58	8.29	3.35	4.95	7.79	6.38	1.18	3.13	8.34	16.59	15.35	7.37	47.65

A register of the fall of rain at Key West was kept by W. A. Whitehead, esq., and A. Gordon, esq., collectors of customs, for 1831, 1835, 1837, and 1838, giving for those years 36.1, 30.1, 38.7, and 20.5 inches respectively. Two of these years are given in the table to show the characteristic deficiency in the winter months: they are not included in the summary.

FORT MYERS, FLORIDA.

1851....	7.61	3.38	2.09	4.57	2.71	18.51	7.35	3.61	8.01	1.66	0.55	1.50	9.37	29.47	10.22	12.49	61.55
1852....	1.54	1.00	11.77	5.70	3.25	18.13	12.02	7.60	9.54	0.40	0.98	2.34	20.72	37.75	10.92	4.88	74.27
1853....	4.29	1.60	2.52	2.20	1.79	25.58	6.35	10.38	22.10	1.40	0.79	3.55	5.51	42.31	24.47	9.44	82.73
1854....	1.15	4.70	0.20	2.75	5.65	6.75	9.70	9.90	1.50	0.35	0.45	1.65	8.60	26.35	2.30	7.50	44.75
1855....	3.20	0.55	6.40	0.50	3.00	10.20	6.80	....	....	....	....	....	9.90	.....	.....	.....	.....
Mean...	3.56	2.24	4.60	3.14	3.28	15.83	8.45	7.87	10.29	0.98	0.69	2.26	11.02	32.15	11.96	8.06	63.19

FORT BROOKE, FLORIDA.

1840....	2.60	4.00	3.20	1.90	8.85	6.72	24.52	23.40	7.75	4.80	4.56	0.56	13.95	54.64	17.11	4.16	89.86
1841....	0.88	2.54	2.80	0.30	0.30	8.95	10.60	8.10	5.61	3.31	3.10	2.40	3.40	27.65	12.02	5.82	48.89
1842....	0.30	2.83	0.10	2.70	2.80	2.90	11.00	12.50	4.00	3.20	2.00	1.63	5.60	26.40	9.20	4.76	45.96
1843....	3.37	5.70	7.20	1.30	2.00	6.90	8.61	6.60	9.90	2.60	0.80	1.30	10.50	22.11	13.30	10.37	56.28
1844....	1.10	3.30	1.80	0.10	5.50	4.70	7.70	15.77	3.50	2.20	3.10	2.90	7.40	28.17	8.80	7.30	51.67
1845....	3.80	0.15	0.40	0.20	4.03	4.51	12.30	8.23	12.69	2.14	1.00	3.61	4.63	25.04	15.83	7.56	53.06
1846....	3.01	4.97	7.73	2.93	4.44	8.17	8.80	9.03	1.33	3.11	0.18	0.50	15.10	26.00	4.62	8.48	54.20
1847....	2.24	3.25	4.38	1.61	1.00	4.68	7.22	4.80	10.23	2.61	0.28	4.50	6.99	16.60	12.52	9.99	46.10
1848....	0.36	0.21	0.05	1.23	2.30	10.59	21.31	14.80	....	....	....	....	3.58	46.70	.....	.....	.....
1849....	....	....	....	....	....	....	8.74	6.32	3.55	1.74	0.77	1.13	.....	.....	6.06	.....	.....
1850....	1.41	5.92	3.50	1.65	3.98	2.05	11.98	5.43	2.71	2.89	....	....	9.13	19.46	.....	.....	.....
1851....	....	....	....	..	2.03	6.57	3.18	6.35	6.93	1.85	2.10	3.00	....	16.10	10.88	.....	.....
1852....	0.95	0.85	6.40	3.05	3.06	13.20	10.95	14.30	10.00	0.30	3.20	3.00	12.51	33.45	13.50	4.80	69.26
1853....	4.55	1.60	3.35	0.75	0.30	9.09	4.12	4.67	4.36	1.70	2.90	7.38	4.40	17.88	8.96	13.53	44.77
1854....	3.83	6.89	2.44	8.82	6.21	9.44	15.53	11.23	4.68	1.77	1.75	4.85	17.47	35.20	8.20	15.57	77.44
1855....	2.34	2.88	3.89	0.75	1.77	7.07	....	....	....	....	....	....	6.41	.....	.....	.....	.....
Mean...	2.20	3.01	3.37	1.95	3.24	7.04	11.10	10.10	6.23	2.40	2.00	2.83	8.56	28.24	10.63	8.04	55.47

FORT MEADE, FLORIDA.

1851....	....	....	....	....	3.00	8.67	5.73	6.47	7.67	2.04	1.28	2.37	.....	20.87	10.99	.....	.....
1852....	0.69	0.27	2.08	2.13	2.31	11.71	11.41	6.35	6.60	1.32	0.15	1.32	6.52	29.47	8.07	2.28	46.34
1853....	1.22	0.55	0.99	0.03	0.15	3.54	4.52	2.39	2.12	0.31	0.78	1.67	1.17	10.45	3.21	3.44	18.27
1854....	1.30	2.21	1.85	3.19	10.57	7.24	8.55	10.20	2.99	2.34	0.02	....	15.61	25.99	5.25	.....	.....
Mean...	1.07	1.01	1.64	1.78	5.34	7.79	7.55	6.35	4.85	1.50	0.56	1.79	8.76	20.68	6.91	3.87	40.22

## CEDAR KEYS, FLORIDA.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1840....	....	....	....	....	....	....	1.10	15.05	6.30	1.70	3.30	1.02	....	....	11.30	....	....
1841...	4.70	1.80	3.40	1.40	1.00	11.50	3.10	10.50	4.00	5.60	5.10	2.10	5.80	25.10	14.70	8.60	54.20
1842....	0.90	8.80	0.20	1.40	0.80	1.30	8.00	10.10	4.60	4.10	1.10	2.90	2.40	19.40	9.80	12.60	44.20
Mean...	2.80	5.30	1.80	1.40	0.90	6.40	4.07	11.88	4.97	3.80	3.17	2.01	4.10	22.35	11.94	10.11	48.50

## FORT BARRANCAS, PENSACOLA, FLORIDA.

1842....	....	....	....	....	....	....	12.29	1.48	13.04	2.30	6.46	2.18	....	....	21.80	....	....
1843....	2.54	2.77	7.85	5.86	0.70	13.04	4.95	7.04	5.87	1.46	5.78	6.30	14.41	25.03	13.11	9.61	62.16
1844....	5.76	0.91	7.78	1.98	5.52	5.11	7.67	6.59	2.61	1.99	11.57	2.09	15.28	19.37	16.17	8.76	59.58
1845....	4.17	1.16	5.00	0.42	3.69	1.37	3.46	....	....	....	2.93	4.14	9.11	....	....	9.47	....
1846....	8.28	10.46	5.80	6.34	....	....	14.48	10.62	2.65	0.48	4.73	2.36	....	....	7.86	21.10	....
1847....	4.78	8.98	10.95	5.85	8.90	....	....	....	....	....	....	....	25.70	....	....	....	....
1851....	3.50	8.03	0.60	4.52	4.20	0.96	1.11	6.15	1.66	....	8.39	2.54	9.32	8.22	....	24.07	....
1852....	0.97	3.40	....	....	....	....	8.02	16.25	0.65	1.10	7.80	3.51	....	....	9.55	7.88	....
1853....	4.15	6.80	4.82	0.51	4.00	4.51	3.80	2.95	12.25	....	....	1.25	9.33	11.26	....	12.20	....
1854....	3.45	5.55	7.21	0.50	3.47	3.39	5.43	6.81	3.47	7.14	0.76	3.74	11.18	15.63	11.37	12.64	50.82
1855....	1.09	1.44	2.86	1.00	1.92	4.21	....	....	....	....	....	....	5.78	....	....	....	....
Mean...	3.87	4.95	5.87	2.94	4.05	4.66	6.80	7.23	5.25	2.41	6.05	2.90	12.86	18.69	13.71	11.72	56.98

## FORT MITCHELL,\* ALABAMA.

1836....	....	....	....	....	....	....	2.10	2.40	0.64	0.11	3.86	1.48	....	....	4.61	....	....
1837....	2.29	5.52	4.61	6.70	6.30	7.08	1.40	6.17	1.81	....	....	....	17.60	14.65	....	9.29	46.15

\* On the Coosa river, near Montgomery, latitude 32° 25'.

## MOUNT VERNON ARSENAL, ALABAMA.

1840....	....	....	....	....	....	....	....	....	....	5.73	1.70	2.69	....	....	....	....	....
1841....	12.84	4.86	9.28	4.65	7.23	4.60	....	....	....	....	....	....	21.16	....	....	....	....
1843....	3.81	5.90	9.22	5.17	0.72	16.67	6.11	2.18	3.49	5.04	6.27	11.80	15.11	24.96	14.80	21.51	76.38
1844....	....	....	....	....	5.92	9.38	5.03	8.29	0.98	2.90	10.57	2.54	....	22.70	14.45	....	....
1845....	11.30	8.37	4.52	1.79	2.54	2.19	2.73	6.48	5.40	11.87	4.99	6.34	8.85	11.40	22.26	26.01	68.52
1846....	6.82	5.31	5.63	11.51	5.49	5.57	9.42	4.74	2.12	0.40	3.75	4.60	22.63	19.73	6.27	16.73	65.36
1847....	6.83	7.70	6.45	3.77	3.94	4.05	11.92	7.39	5.85	0.42	4.10	9.01	14.16	23.36	10.37	23.54	71.43
1848....	3.90	5.17	3.50	2.78	2.15	6.35	3.10	4.39	2.99	1.54	7.94	5.74	8.43	13.84	12.47	14.81	49.15
1849....	2.89	2.44	1.36	3.06	6.11	9.25	14.56	11.15	0.65	13.00	10.54?	4.22	10.53	34.96	24.19	9.55	79.23
1850....	9.49	4.81	2.09	4.22	6.72	2.01	6.44	5.13	0.15	0.85	2.32	5.22	13.03	12.58	3.32	19.62	48.55
1851....	3.89	7.26	0.77	1.14	3.44	5.35	1.84	8.60	4.42	2.07	6.99	2.91	5.35	15.88	13.48	14.06	48.77
1852....	1.92	1.95	1.52	6.24	6.75	1.56	1.92	9.64	0.70	2.40	9.74	7.15	14.51	13.12	12.84	11.02	51.49
1853*...	11.18	8.10	16.45	6.59	5.34	2.00	12.64	8.95	11.09	8.44	2.70	13.09	28.38	23.59	22.23	32.37	106.57?
1854....	11.01	12.83	6.22	1.96	4.45	6.72	6.13	2.29	6.82	0.81	2.34	0.73	12.63	15.34	9.97	24.57	62.51
Mean...	6.80	6.04	4.59	4.21	4.62	6.14	6.30	6.40	3.05	3.92	6.18	5.25	13.42	18.84	13.15	18.09	63.50

\* The measurements for this year are rejected from the summary for internal evidence of error, as well as by the amount in comparison with other years.

PASS CHRISTIAN AND EAST PASCAGOULA, MISSISSIPPI.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1843....	....	....	....	....	....	....	8.70	2.39	11.19	2.39	....	....	.....	.....	.....	.....	.....
1844....	....	....	....	....	....	....	7.99	4.61	0.22	1.54	....	....	.....	.....	.....	.....	.....
1845....	....	....	....	....	....	....	2.70	....	....	....	....	....	.....	.....	.....	.....	.....
1849....	....	....	....	....	....	....	....	5.94	2.12	4.82	1.83	....	.....	.....	8.77	.....	.....
1850....	....	....	....	....	....	....	....	1.76	1.03	...	....	....	.....	.....	.....	.....	.....
1851....	....	....	....	...	2.25	1.44	6.14	5.32	5.83	....	....	....	.....	12.90	.....	.....	.....
1852....	....	....	....	....	8.85	1.85	6.04	8.54	0.65	....	....	....	.....	16.43	.....	.....	.....
1853....	....	....	....	....	....	....	10.72	3.61	6.83	....	....	....	.....	.....	.....	.....	.....
Mean...	....	....	....	....	5.55	1.65	7.05	4.60	3.98	2.92	....	....	.....	13.25	.....	.....	.....

FORT WOOD, LOUISIANA.

1843....	....	....	....	1.50	0.22	18.24	8.61	2.04	5.66	2.39	6.77	6.42	.....	28.89	14.82	.....	.....
1844....	4.85	0.41	3.48	0.39	5.31	1.89	4.28	8.11	1.50	4.06	10.68	1.88	9.18	14.28	16.24	7.14	46.84
1845....	5.42	1.28	5.35	1.42	7.31	0.95	4.01	3.78	5.24	10.49	....	....	14.08	8.74	.....	.....	.....
1846....	6.45	3.94	10.61	18.17	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....
Mean...	5.57	1.88	6.48	5.37	4.28	7.03	5.63	4.64	4.13	5.65	5.82	4.15	16.13	17.30	15.60	11.60	60.63

FORT PIKE, LOUISIANA.

1843....	....	....	....	4.26	1.55	29.56	18.22	6.01	15.26	4.14	6.49	7.31	.....	53.79	25.89	.....	.....
1844....	4.03	0.80	3.50	0.86	9.52	1.18	5.76	3.31	1.61	3.30	7.14	3.25	13.88	10.25	12.05	8.08	44.26
1845....	4.42	2.23	3.65	0.99	2.69	0.73	1.40	....	....	....	....	3.30	7.33	.....	.....	.....	.....
1846....	8.40	4.19	14.25	13.75	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....
Mean...	5.62	2.41	7.13	4.98	4.59	10.49	8.46	4.66	8.43	3.72	6.81	4.62	16.70	23.61	18.96	12.65	71.92

NEW ORLEANS BARRACKS, LOUISIANA.

1839....	8.10	3.40	2.19	2.10	2.02	3.11	9.86	4.80	0.12	2.40	3.92	4.40	6.31	17.77	6.44	15.90	46.42
1840....	0.11	2.01	1.09	3.10	4.80	7.10	5.60	3.10	1.80	7.80	5.55	2.22	8.99	15.80	15.15	4.34	44.28
1841....	19.50	5.10	6.90	5.10	1.70	3.10	0.89	3.41	2.87	2.41	0.11	9.44	13.70	7.40	5.39	34.04	60.53
1842....	4.21	3.51	2.71	5.20	1.12	1.13	4.52	7.40	4.80	1.50	3.25	1.70	9.03	13.05	9.55	9.42	41.05
1843....	4.00	3.80	5.31	2.67	0.45	14.57	....	....	....	....	1.93	6.02	8.43	.....	.....	13.82	.....
1844....	4.41	0.73	3.90	0.53	3.16	2.75	....	....	....	....	7.78	1.35	7.59	15.35	9.54	6.49	38.97
1845....	6.24	1.19	5.16	1.99	8.06	3.20	....	....	....	....	....	....	15.21	.....	.....	.....	.....
1846....	...	....	7.88	10.70	5.38*	1.85*	8.86	....	....	....	....	....	24.96	.....	.....	.....	.....
1847....	7.71	3.77	3.40	4.63	4.80	3.43	5.06	6.81	2.83	0.75	2.59	7.73	12.83	15.30	6.17	19.21	53.51
1848....	5.42	1.28	1.97	3.92	4.75	9.36	7.79	8.37	0.80	2.31	8.83	1.66	10.64	25.52	11.94	8.56	56.66
1849....	3.55	2.45	2.83	2.43	8.01	3.79	11.09	....	....	....	....	....	13.27	.....	.....	.....	.....
1850....	7.40	4.53	2.27	4.10	6.20	8.92	6.31	....	....	0.96	1.58	3.46	12.37	.....	.....	15.39	.....
1851....	3.82	3.18	1.20	3.49	....	....	....	....	....	3.70	9.00	2.69	.....	.....	.....	9.69	.....
1852....	0.80	1.45	4.24	5.25	....	....	....	....	....	2.83	7.00	5.30	.....	.....	.....	7.55	.....
1853....	3.20	4.20	7.38	1.88	2.80	1.86	....	....	....	....	....	....	12.06	.....	.....	.....	.....
Mean...	5.61	2.90	3.90	3.29	4.10	4.97	6.66	5.65	2.20	2.74	4.68	4.20	11.29	17.28	9.62	12.71	50.90

\* Incomplete measurements.



## SERIES OF MONTHLY AND ANNUAL MEASUREMENTS OF RAIN.

## BATON ROUGE, LOUISIANA.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1843....	2.06	2.39	6.54	3.08	2.78	7.62	8.20	2.57	9.16	2.58	4.28	9.81	12.40	18.39	16.02	14.26	61.07
1844....	5.40	....	3.10	0.50	3.30	3.50	3.70	5.60	1.10	3.60	7.06	2.20	6.90	12.80	11.76	.....	.....
1845....	4.90	1.80	5.90	4.80	3.10	4.40	6.40	2.30	3.60	3.10	5.00	5.30	13.80	13.10	11.70	12.00	50.60
1846....	4.80	5.70	12.30	17.20	13.20	16.00	14.40	15.90	5.20	0.80	6.20	4.70	42.70	46.50	12.20	15.20	116.60
1847....	11.60	....	....	....	....	2.30	3.30	4.20	....	....	....	....	....	....	....	....	....
1848....	....	....	....	....	....	8.60	11.80	12.10	0.50	1.38	6.80	7.60	....	32.50	8.68	....	... ..
1849....	3.20	6.20	1.30	2.50	....	....	10.92	5.38	2.24	6.00	5.03	2.50	....	....	13.27	11.90	....
1850....	16.02	7.45	3.13	9.40	4.19	9.01	4.28	3.75	3.58	1.03	....	9.28	16.72	17.04	....	33.37	....
1851....	0.97	5.27	1.54	2.26	1.42	2.06	2.68	7.96	0.59	2.32	8.91	5.36	5.22	12.70	11.82	11.60	41.34
1852....	1.56	6.73	2.19	8.29	6.08	1.33	5.64	2.26	3.30	2.81	9.32	3.95	16.56	9.23	15.43	12.24	53.46
1853....	4.48	4.19	4.67	0.57	4.55	2.05	11.18	4.93	...	1.35	....	5.00	9.79	18.16	....	....	....
1854....	2.85	5.50	6.15	3.58	8.05	4.00	6.55	7.41	9.88	4.38	0.45	1.82	17.78	17.96	14.71	10.17	60.62
Mean...	5.26	4.91	4.68	5.22	5.18	5.52	7.42	6.20	3.91	2.67	5.90	5.23	15.08	19.14	12.48	15.40	62.10

## FORT JESUP, LOUISIANA.

1836....	7.05	3.32	5.78	5.53	3.93	5.10	3.09	4.29	4.43	2.50	1.40	3.43	15.24	12.48	8.33	13.80	49.85
1837....	1.75	2.08	8.69	1.62	2.55	2.81	4.20	4.27	9.11	7.32	0.30	4.84	12.86	11.28	16.73	8.67	49.54
1838....	5.82	2.60	4.60	10.80	5.32	1.50	0.67	3.55	0.51	3.85	2.40	5.60	20.72	5.72	6.76	14.02	47.22
1839....	3.72	7.40	3.71	2.50	4.10	2.60	6.23	1.40	0.20	5.10	4.20	4.20	10.31	10.23	9.50	15.32	45.36
1840....	3.40	1.96	2.41	3.25	2.90	6.95	5.18	0.85	1.67	1.44	3.18	3.93	8.56	12.98	6.29	9.29	37.12
1841....	7.83	0.06	5.89	2.98	5.93	15.70	0.45	5.60	2.54	6.11	0.67	2.19	14.80	21.75	9.32	10.08	55.95
1842....	2.86	5.79	4.03	5.59	1.40	1.64	3.90	3.17	4.41	2.52	2.86	3.71	11.02	8.71	9.79	12.36	42.27
1843....	2.20	1.41	3.25	5.60	4.42	3.30	7.66	1.34	2.64	5.79	8.30	7.08	13.27	12.30	16.73	10.69	52.99
1844....	4.10	1.20	5.30	6.60	3.05	5.11	1.77	2.24	2.83	2.81	3.87	2.54	14.95	9.12	9.51	7.84	41.42
1845....	8.32	1.80	3.55	4.12	4.43	1.43	0.50?	....	1.90?	0.60?	2.50	2.80	12.10	.....	.....	12.92	.....
Mean...	4.70	2.76	5.02	4.86	3.80	4.61	3.36	2.97	3.02	3.80	2.92	4.03	13.68	10.94	9.74	11.49	45.85

## FORT TOWSON, INDIAN TERRITORY.

1836....	....	....	....	....	....	5.90	1.30	2.30	3.70	6.20	2.80	1.40	9.50	12.70	.....	.....	.....
1837....	1.00	1.60	6.00	2.50	6.30	6.10	7.00	1.10	5.40	3.10	2.10	1.60	14.80	14.20	10.60	4.20	43.80
1838....	4.20	2.10	1.60	1.90	6.70	0.70	2.10	3.70	0.30	2.80	5.40	2.90	10.20	6.50	8.50	9.20	34.40
1839....	7.10	1.35	5.20	1.60	7.50	17.50	6.40	5.10	2.10	3.90	7.00	1.30	14.30	29.90	12.00	9.75	66.00
1840....	4.40	3.00	3.70	13.60	2.30	1.60	4.80	3.00	6.20	8.60	3.00	1.50	19.60	9.40	17.80	8.90	55.70
1841....	3.60	0.20	7.30	3.20	3.30	7.00	....	3.50	6.50	9.90	9.20	8.30	13.80	.....	25.60	12.10	.....
1842....	2.70	7.50	7.40	10.30	8.80	14.20	4.70	4.00	4.00	1.85	2.06	5.85	26.50	22.90	7.91	16.05	73.36
1843....	2.78	0.25	3.35	7.10	9.26	1.91	4.40	5.72	4.40	6.56	9.37	0.80	19.71	12.03	20.33	3.83	55.90
1844....	3.45	2.08	4.56	10.38	3.25	2.66	5.35	7.96	1.30	2.77	1.73	1.05	18.19	15.97	5.80	6.58	46.54
1845....	3.00	0.70	5.73	3.49	5.17	6.35	0.00	3.26	2.48	4.90	1.19	1.81	14.39	9.61	7.57	5.51	37.08
1846....	3.20	2.75	2.00	5.99	....	....	....	....	....	....	....	....	....	....	....	....	....
1849....	....	....	....	....	....	6.21	10.76	3.57	2.54	3.66	2.91	6.17	....	20.54	9.11	....	....
1850....	4.03	4.07	2.85	4.79	2.04	5.06	3.29	4.39	2.66	5.19	6.21	5.07	9.68	12.73	14.06	13.17	49.64
1851....	1.70	11.09	2.66	2.52	6.33	5.04	....	7.31	0.01	1.13	3.69	....	11.51	.....	4.83	....	....
1852....	....	....	....	....	....	....	....	....	...	4.88	4.84	0.77	....	....	....	....	....
1853....	1.72	2.90	3.88	4.99	9.09	0.90	5.38	0.49	6.11	3.40	1.97	1.27	17.96	6.77	11.48	5.89	42.10
1854....	1.01	2.00	5.10	2.22	....	...	....	....	....	....	....	....	....	....	....	....	....
Mean...	3.13	2.97	4.38	5.33	5.84	5.78	4.62	3.96	3.41	4.59	4.23	2.84	15.55	14.36	12.23	8.94	51.08

FORT WASHITA, INDIAN TERRITORY.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1843....	....	....	....	....	....	....	....	0.60	8.61	3.80	7.56	1.85	.....	.....	19.97	.....	.....
1844....	1.77	2.87	4.35	5.05	4.59	4.43	2.76	1.67	2.25	5.80	2.29	0.17	13.99	8.86	8.34	4.81	36.00
1845....	1.35	0.66	5.48	5.04	4.50	2.62	0.33	4.12	2.65	3.65	2.40	1.90	15.02	7.07	8.70	3.91	34.70
1846....	4.40	2.73	2.50	3.24	4.70	10.23	1.14	2.39	9.60	2.35	3.55	3.01	10.44	13.67	15.50	10.14	49.75
1847....	1.28	4.10	3.61	1.60	3.05	3.09	6.55	5.85	2.40	0.41	4.65	0.86	8.26	15.49	7.46	6.24	37.45
1848....	1.38	1.54	1.70	7.91	1.97	4.30	3.73	0.35	2.45	2.55	4.90	2.50	11.58	8.38	9.90	5.42	35.28
1849....	2.65	2.65	2.69	6.96	14.61	4.00	13.40	4.00	3.74	4.42	2.50	2.67	24.66	21.40	10.66	7.97	64.29
1850....	3.10	0.68	2.49	3.33	4.22	5.67	3.30	4.80	2.30	2.56	5.14	3.75	11.04	13.77	10.00	7.53	42.34
1851....	0.20	5.70	1.35	2.95	4.47	4.20	0.10	1.40	0.60	2.60	5.15	2.80	8.77	5.70	8.35	8.70	31.52
1852....	1.37	4.80	5.40	1.62	4.61	5.48	2.90	4.45	6.43	5.95	3.77	0.29	11.63	12.83	16.15	6.46	47.07
1853....	0.62	2.67	0.75	1.39	7.30	2.29	4.48	0.95	4.28	3.50	0.80	1.43	9.44	7.72	8.58	4.72	30.46
1854....	0.01	3.30	5.53	4.21	11.73	9.17	0.59	1.39	1.17	1.19	3.57	1.42	21.47	11.15	5.93	4.73	43.28
Mean..	1.65	2.88	3.27	3.94	5.98	5.04	3.57	2.66	3.87	3.06	3.85	1.59	13.19	11.27	10.78	6.42	41.66

FORT SMITH, ARKANSAS.

1837....	....	....	....	....	3.35	8.91	5.00	0.20	6.90	1.40	3.50	2.30	14.11	11.80	.....	.....	.....
1838....	0.60	0.20	0.80	2.40	4.50	1.50	3.95	1.95	1.10	4.00	4.80	1.50	7.70	7.40	9.90	2.30	27.30
1839....	1.45	0.77	4.75	2.05	1.75	8.50	2.42	5.55	4.45	7.17	2.18	1.55	8.55	16.47	13.80	3.77	42.59
1840....	1.70	2.65	0.80	8.50	4.43	1.90	7.41	0.67	6.54	7.91	2.96	2.76	13.73	9.98	15.41	7.11	46.23
1841....	1.36	....	1.44	1.49	3.28	6.58	0.30	7.17	3.82	8.72	12.57	4.70	6.21	14.05	25.11	.....	.....
1842....	3.82	9.99	1.13	4.76	4.33	4.39	2.02	2.63	1.62	0.78	0.90	2.36	10.22	9.10	3.30	16.17	38.79
1843....	1.51	0.26	2.29	5.49	4.85	6.80	3.26	2.37	3.42	2.14	3.51	2.07	12.63	12.43	9.07	3.84	37.97
1844....	1.30	3.53	2.41	14.28	3.12	1.10	1.37	0.52	2.08	2.01	0.91	0.30	19.81	2.99	5.00	5.13	32.93
1845....	2.29	1.20	5.05	1.96	3.67	2.85	0.51	9.14	1.60	2.90	1.13	1.06	10.68	11.25	5.63	4.55	32.11
1846....	1.93	2.27	1.52	5.48	5.65	7.00	1.71	5.58	4.75	2.30	2.14	5.40	12.65	14.29	9.19	9.60	45.73
1847....	0.98	1.73	5.56	3.22	3.80	5.95	11.18	6.40	0.76	1.26	7.05	1.15	12.58	23.53	9.07	3.85	49.04
1848....	2.88	1.00	3.74	5.64	5.92	4.90	5.23	2.35	0.90	3.80	3.55	4.45	15.30	12.48	8.25	8.33	44.36
1849....	4.35	1.76	4.65	8.45	8.40	6.79	7.90	1.95	1.65	2.00	3.70	5.94	21.50	16.64	7.35	12.05	57.54
1850....	2.87	0.95	1.55	5.28	3.12	3.27	....	....	....	....	....	....	9.95	.....	.....	.....	.....
1852....	....	....	....	....	....	4.58	4.96	3.94	3.90	4.89	4.05	1.62	.....	13.48	12.84	.....	.....
1853....	0.93	1.99	1.10	0.99	5.01	2.45	2.75	2.58	3.20	0.73	1.85	0.76	7.10	7.78	5.78	3.68	24.34
1854....	1.37	2.05	7.05	6.55	6.25	2.26	1.02	0.88	3.53	2.85	1.63	2.54	19.85	4.16	8.01	5.96	37.98
Mean..	1.96	2.17	2.92	5.10	4.46	4.74	3.82	4.47	3.01	3.43	3.49	2.53	12.48	13.03	9.93	6.66	42.10

FORT GIBSON, INDIAN TERRITORY.

1836....	....	....	....	....	....	....	3.10	5.90	8.04	3.05	2.08	1.20	.....	.....	13.17	.....	.....
1837....	3.01	1.00	1.90	4.30	4.45	6.10	2.46	0.50	6.72	0.52	3.30	0.40	10.65	9.06	10.54	4.41	34.66
1838....	0.80	0.20	1.01	1.20	4.11	2.04	0.80	1.06	0.52	2.36	2.82	1.92	6.31	3.90	5.70	2.92	18.84
1839....	2.36	1.45	1.35	2.10	1.10	4.65	....	....	....	9.10	1.40	2.50	4.55	.....	.....	6.31	....
1840....	4.08	1.20	1.40	12.55	10.13	3.30	7.10	0.84	0.81	8.50	3.91	2.00	24.08	11.24	13.22	7.28	55.82
1841....	3.23	0.60	4.90	2.35	2.83	2.09	1.41	2.56	2.43	4.50	8.15	1.20	10.08	6.06	15.08	5.03	36.25
1842....	1.10	1.00	0.30	4.10	5.40	4.75	2.60	3.65	0.60	1.81	1.20	2.60	9.80	11.00	3.61	4.70	29.11
1843....	7.40	0.70	1.31	2.71	2.59	3.32	2.30	8.18	2.11	2.15	1.94	0.90	6.61	13.80	6.20	9.00	35.61
1844....	0.76	6.07	1.91	9.62	8.46	3.15	0.64	1.98	0.76	3.28	0.87	0.08	19.99	5.77	4.91	6.91	37.58
1845....	1.36	0.80	2.95	8.08	2.01	2.18	1.45	1.63	1.44	3.49	0.85	0.03	13.04	5.26	5.78	2.19	26.67

## FORT GIBSON, INDIAN TERRITORY—Continued.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1846....	1.02	1.54	1.79	3.04	4.60	6.92	0.70	1.40	4.76	0.67	2.53	4.88	9.43	9.02	7.96	7.44	33.85
1847....	0.10	2.12	1.42	3.10	1.35	3.88	1.89	1.78	0.95	3.10	3.35	1.06	5.87	7.55	7.40	3.28	24.10
1848....	1.05	0.20	3.12	5.21	4.52	4.50	6.98	0.00	0.35	5.25	1.90	4.65	12.85	11.48	7.50	5.90	37.73
1849....	2.19	0.88	4.90	2.17	7.52	9.17	8.72	3.70	2.03	4.05	4.40	2.90	14.59	21.59	10.50	5.97	52.65
1850....	1.40	3.17	4.91	4.73	0.37	4.58	1.00	3.00	0.35	3.75	4.75	3.00	10.00	8.50	8.85	7.57	35.00
1851....	0.50	10.42	1.50	0.50	3.20	6.45	1.25	1.15	3.14	9.35	7.10	7.70	5.20	5.85	19.59	18.82	52.46
1852....	1.58	5.67	2.24	2.95	6.72	5.85	6.12	4.99	4.38	5.50	4.91	0.74	11.91	16.96	14.79	7.99	51.65
1853....	0.82	2.27	1.06	3.52	6.65	1.60	0.76	4.72	1.35	1.13	1.30	0.70	11.23	7.08	3.78	3.79	25.88
1854....	0.30	1.43	7.83	3.16	7.67	2.80	0.21	0.33	0.68	1.58	2.06	0.77	18.66	3.34	4.32	2.50	28.82
Mean...	1.83	2.26	2.54	4.19	4.65	4.30	2.75	2.63	2.30	3.85	3.10	2.06	11.38	9.68	9.25	6.15	36.46

## FORT SCOTT, MISSOURI, (KANSAS.)

1843. ..	4.98	0.20	1.75	4.46	6.10	8.46	5.34	3.30	4.42	0.69	3.38	1.45	12.31	17.10	8.49	6.63	44.53
1844....	2.05	1.30	3.78	6.91	14.79	12.64	10.50	2.51	3.33	2.49	1.52	0.78	25.48	25.65	7.34	4.13	62.60
1845....	0.70	2.33	0.94	5.39	8.16	24.56	4.57	7.18	3.35	3.05	0.97	0.39	14.49	36.31	7.37	3.42	61.59
1846....	1.27	0.92	1.61	2.64	1.76	7.03	1.17	3.09	5.53	2.56	2.97	3.49	6.01	11.29	11.06	5.68	34.04
1847....	1.25	1.24	1.10	4.22	3.12	4.63	5.84	1.79	1.50	2.48	5.56	1.61	8.44	12.26	11.15	4.10	35.95
1848....	0.94	0.25	2.53	1.96	7.33	1.85	4.84	4.20	1.19	1.72	0.27	2.17	11.82	10.89	3.18	3.36	29.25
1849....	3.26	0.18	3.30	5.38	12.20	3.49	5.77	2.62	0.56	3.86	3.78	1.03	20.88	11.88	8.20	4.27	33.23
1850....	1.59	1.52	2.40	3.13	2.19	4.80	0.27	5.45	0.52	1.56	4.39	2.21	7.72	10.52	6.45	5.32	30.01
1851....	0.14	3.60	0.48	0.75	4.39	7.53	2.74	3.89	0.15	2.01	5.49	1.84	5.62	14.16	7.65	4.98	32.41
1852....	2.22	0.11	0.98	2.17	10.74	6.36	4.45	2.90	2.40	6.23	5.98	1.98	13.89	13.71	14.61	4.31	46.52
1853....	2.68	1.30	0.82	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Mean...	1.92	1.18	1.79	3.70	7.08	8.13	4.55	3.69	2.30	2.66	3.43	1.69	12.57	16.37	8.39	4.79	42.12

## JEFFERSON BARRACKS, MISSOURI.

1840....	....	....	....	....	....	....	4.97	12.25	5.16	5.79	1.28	0.55	....	....	12.23	....	....
1841....	2.08	1.03	4.58	4.39	1.95	1.34	1.88	2.51	1.99	6.76	4.08	3.68	10.92	5.63	12.83	6.79	36.27
1842....	0.44	3.46	2.93	2.02	4.81	5.81	1.77	1.90	0.66	2.03	1.58	1.77	9.76	9.48	4.27	5.67	29.18
1843....	2.27	1.75	2.30	4.52	3.01	2.12	2.60	0.97	5.76	1.65	4.16	1.47	9.83	5.69	11.57	5.49	32.58
1844....	2.19	2.33	2.50	3.13	7.27	5.40	5.23	0.71	1.80	1.06	1.46	1.19	12.90	11.33	3.32	5.71	33.27
1845....	1.18	0.84	3.24	1.71	3.25	9.78	3.89	4.53	1.71	0.63	1.35	0.80	7.30	18.20	3.69	2.82	32.01
1846....	3.60	1.02	1.73	4.83	3.50	2.86	0.45	2.09	3.47	0.82	1.42	10.22	7.58	5.40	5.71	14.86	33.55
1847. ..	....	....	3.12	....	....	4.10	4.47	....	0.85	....	....	0.23	....	....	....	....	....
1848....	1.83	0.92	1.94	1.50	2.58	7.33	4.01	4.25	2.90	1.55	2.28	4.01	6.02	15.59	6.73	6.76	35.10
1849....	3.41	0.37	2.77	1.53	2.00	5.85	7.70	4.72	4.84	1.85	2.02	1.52	6.30	18.27	8.71	5.30	38.58
1850....	1.65	3.22	4.66	5.02	3.46	1.52	2.95	5.20	2.75	1.75	4.11	3.32	13.14	9.67	8.61	8.19	39.61
1851....	0.40	5.05	1.86	2.80	3.97	5.64	4.65	7.06	0.81	2.26	0.38	1.25	8.63	17.35	3.45	6.70	36.13
1852....	3.34	1.73	7.19	1.39	8.12	11.85	2.72	3.24	2.97	4.81	3.80	3.97	16.70	17.81	11.58	9.04	55.13
1853. .	0.57	1.51	0.85	3.53	3.52	3.19	6.90	7.08	4.20	1.10	2.40	1.23	7.90	17.17	7.70	3.31	36.08
1854....	1.90	3.25	6.90	3.40	6.98	4.19	0.96	1.47	3.41	6.57	3.13	1.11	17.28	6.62	13.11	6.26	43.27
Mean...	1.91	2.04	3.32	3.06	4.18	5.07	3.67	4.14	2.88	2.76	2.38	2.42	10.56	12.88	8.02	6.37	37.83



ST. LOUIS ARSENAL, MISSOURI.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring	Summer	Autumn	Winter	Year.
1836....	....	....	....	....	....	....	3.66	6.51	5.91	2.59	4.29	5.62	.....	.....	12.69	.....	.....
1837....	0.70	1.03	3.43	1.40	3.00	2.77	4.07	3.19	2.88	1.15	1.60	1.59	7.89	9.94	5.63	2.45	27.55
1838....	3.70	2.65	1.19	2.00	1.58	3.63	2.09	3.89	1.00	0.49	1.73	6.59	4.77	9.48	3.18	6.74	44.37
1839....	1.43	2.40	2.30	3.14	7.40	7.21	5.19	1.50	2.49	...	....	....	12.54	13.90	.....	.....	.....
1840....	0.52	1.21	3.58	....	....	....	....	....	....	2.68	2.81	6.95	.....	.....	.....	1.08	.....
1841....	1.14	0.11	5.70	3.57	1.20	3.93	3.63	1.95	2.59	7.49	5.45	3.63	19.47	9.51	15.38	4.28	59.64
1842....	1.94	1.39	2.29	4.64	4.95	3.53	4.13	0.76	2.02	1.59	2.50	1.59	11.88	8.42	6.02	4.74	31.66
1843....	4.88	3.76	3.22	5.57	11.03	7.54	8.10	1.47	0.63	2.68	0.59	2.33	19.82	17.11	3.21	10.97	51.11
1844....	1.12	1.74	4.04	3.67	3.15	13.75	0.63	7.45	6.59	1.91	1.73	0.41	10.76	14.11	4.23	3.17	.....
1845....	2.20	2.19	3.66	7.59	5.97	4.34	1.21	0.68	6.28	4.32	4.19	13.55	16.61	6.83	14.79	17.94	59.17
1846....	1.79	3.09	4.34	8.25	5.95	11.47	5.30	0.74	2.87	10.07	1.65	1.14	18.54	17.51	.....	6.02	.....
1847....	0.96	2.96	5.56	2.93	9.94	18.36	5.56	3.31	1.13	4.32	1.91	5.27	18.49	27.83	7.41	3.19	.....
1848....	7.59	0.55	3.69	4.08	6.99	15.70	13.67	7.95	3.96	2.89	3.95	1.99	14.07	37.92	10.11	10.04	71.54
1849....	2.09	3.00	4.89	5.85	3.41	0.17	3.68	1.17	2.20	2.45	4.65	2.17	14.15	4.42	9.89	7.16	55.13
1850....	0.28	7.31	1.75	3.39	2.26	3.81	1.39	6.40	0.63	1.51	2.89	2.96	7.31	11.69	4.99	10.55	34.55
1851....	1.21	1.43	8.00	2.54	4.44	7.82	1.08	2.12	1.14	4.73	2.75	2.99	14.98	11.02	8.62	5.79	40.11
1852....	0.53	2.13	0.90	3.68	2.85	3.69	4.15	4.95	3.60	1.10	0.85	0.35	7.19	12.70	5.55	3.06	25.74
1853....	0.65	2.49	7.10	4.30	4.65	2.20	1.70	1.48	1.35	3.00	1.45	0.99	16.65	5.38	5.7	3.95	31.88
Mean...	1.93	3.37	3.82	4.16	4.88	6.94	4.00	3.15	2.93	3.23	3.10	1.99	12.86	14.09	8.71	6.29	41.65

DETROIT BARRACKS, MICHIGAN.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring	Summer	Autumn	Winter	Year.
1836....	....	....	....	4.05	4.61	5.10	5.12	1.47	3.79	2.03	1.24	1.55	.....	11.69	12.10	.....	.....
1837....	1.65	0.89	3.39	1.55	1.42	3.10	2.49	3.25	2.39	2.65	4.35	0.95	6.27	8.75	9.39	2.99	27.22
1838....	4.29	1.00	0.55	4.25	2.00	6.56	...	....	....	....	1.95	0.15	4.59	.....	.....	5.95	29.84
1839....	2.00	1.49	5.15	2.29	0.70	6.10	1.29	1.00	1.99	0.93	1.29	0.50	8.65	3.39	4.63	3.99	24.13
1840....	1.74	1.75	4.62	3.34	2.25	1.83	3.89	1.25	2.69	1.93	2.75	1.63	10.21	6.93	7.65	5.12	29.93
1841....	2.59	0.15	2.69	3.00	3.78	1.09	1.07	1.39	4.37	0.36	2.39	3.24	9.47	4.56	7.12	6.01	27.16
1842....	0.61	1.68	3.53	3.49	0.49	4.01	7.02	1.22	3.96	2.68	2.01	1.69	7.56	12.25	8.65	3.93	30.84
1843....	1.91	1.99	1.85	2.05	3.16	5.33	2.35	1.46	2.29	1.99	1.39	2.07	7.06	9.29	5.49	5.93	27.64
1844....	2.25	0.61	2.60	3.35	5.63	5.18	4.49	3.27	1.03	1.85	1.54	0.95	11.03	12.94	4.72	3.81	33.10
1845....	1.71	0.63	1.89	3.29	1.03	2.39	1.92	1.32	3.82	1.60	1.59	0.59	6.21	5.54	6.92	2.84	21.51
1846....	4.06	2.13	3.15	1.68	5.42	3.55	....	....	....	....	....	....	10.25	.....	.....	.....	.....
1847....	2.81	1.01	2.57	2.99	2.10	3.96	2.35	4.35	3.25	6.00	1.82	0.99	7.57	10.66	11.67	4.19	37.99
1848....	1.53	1.56	3.84	2.00	0.29	2.65	2.85	3.56	2.11	1.11	2.36	1.49	6.13	9.66	5.58	4.63	25.19
1849....	1.24	3.63	1.87	3.70	5.30	....	....	....	....	....	....	....	10.49	.....	.....	.....	.....
Mean...	2.15	1.38	2.56	2.92	2.73	3.91	3.29	2.13	3.31	2.04	2.06	1.30	8.51	9.29	7.41	4.86	31.87

FORT GRATIOT, MICHIGAN.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring	Summer	Autumn	Winter	Year.
1836....	....	....	....	....	...	....	5.19	3.47	4.15	3.76	2.63	3.62	.....	.....	10.59	.....	.....
1837....	1.24	2.66	4.13	1.70	2.56	....	....	....	....	....	....	....	8.44	.....	.....	.....	.....
1838....	....	....	....	....	...	....	3.93	1.09	3.73	1.44	1.43	1.25	.....	.....	6.69	.....	.....
1839....	2.59	2.69	1.01	4.22	2.36	4.45	6.27	4.66	6.46	4.33	2.29	1.59	7.59	15.38	12.99	6.78	42.93
1840....	2.86	0.63	2.87	2.41	1.49	4.65	2.64	2.29	7.91	1.14	1.42	2.79	6.77	9.49	10.47	6.22	32.99
1841....	2.23	2.11	4.13	4.14	2.53	5.67	3.45	1.25	7.26	2.84	2.55	1.66	11.12	9.77	12.63	6.65	39.63

## FORT GRATIOT, MICHIGAN—Continued.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring	Summer.	Autumn.	Winter.	Year.
1843....	2.72	2.64	2.23	2.15	1.68	4.06	2.08	1.82	3.55	2.73	2.12	1.68	6.06	7.96	8.40	7.04	29.46
1844....	2.73	1.75	2.77	0.99	5.05	3.95	3.63	4.99	1.33	2.63	2.43	1.39	8.81	12.57	6.49	5.87	33.74
1845....	2.95	1.16	2.62	2.31	1.83	2.78	1.67	2.16	4.80	2.44	1.83	0.72	6.76	6.56	8.57	4.83	26.72
1846....	2.97	1.61	2.17	2.19	4.55	2.35	....	....	....	....	....	....	8.91	.....	.....	.....	.....
1849....	....	....	....	....	....	....	1.80	4.70	1.12	4.20	0.96	1.66	.....	.....	6.28	.....	.....
1850....	1.85	1.02	3.19	2.61	1.02	4.79	3.06	1.80	1.73	1.01	2.19	1.98	6.42	9.65	4.93	4.35	25.75
1851....	1.11	1.77	1.25	2.51	5.86	1.50	3.33	3.56	3.46	2.64	3.25	2.06	9.12	8.89	9.35	4.91	31.77
1852....	1.28	1.36	4.57	2.34	0.94	....	....	....	....	....	....	....	7.85	.....	.....	.....	.....
Mean ..	2.19	1.76	2.82	2.51	2.69	3.74	3.37	2.58	4.10	2.66	2.10	1.80	8.02	9.99	8.86	5.75	32.62

## FORT MACKINAC, MICHIGAN.

1836....	....	....	....	....	....	....	2.81	1.92	2.48	2.51	2.47	1.84	.....	.....	7.76	.....	.....
1837....	1.75	1.09	1.70	....	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....
1844....	....	....	....	....	....	....	....	....	....	....	1.45	1.19	.....	.....	.....	.....	.....
1845....	2.05	1.05	1.18	0.71	0.92	1.26	2.83	1.08	5.15	1.56	1.73	0.80	2.81	5.17	8.46	3.40	19.84
1846....	1.29	0.26	1.77	2.01	3.27	0.89	0.94	1.23	1.43	1.13	2.14	1.20	7.05	8.11	4.70	2.75	17.61
1847....	1.23	0.81	1.16	1.48	4.03	2.97	2.13	1.82	3.40	0.34	3.10	0.53	6.67	6.97	6.84	2.67	23.15
1848....	1.80	0.82	0.83	1.36	2.16	....	....	....	....	....	....	....	4.35	.....	.....	.....	.....
1849....	0.64	0.27	0.40	1.99	2.60	1.20	2.89	5.11	1.60	1.70	1.43	0.51	4.99	9.20	4.73	1.42	20.34
1850....	0.87	0.06	0.82	0.73	0.50	1.63	5.05	4.10	5.52	5.05	3.15	0.40	1.53	10.83	13.72	0.83	26.91
1851....	0.80	0.59	0.41	0.63	1.23	1.91	3.60	0.55	0.50	0.65	0.43	0.85	2.32	6.06	1.58	1.74	11.70
1852....	....	....	....	....	....	....	2.52	0.76	1.40	3.94	0.63	3.46	.....	.....	5.97	.....	.....
1853....	0.51	2.05	2.12	0.85	3.55	6.23	3.56	7.81	5.01	1.73	0.93	2.87	6.52	17.60	7.67	5.43	7.22
1854....	2.50	1.23	1.56	1.04	2.65	6.35	5.67	4.26	3.22	2.23	3.66	0.93	5.25	16.23	9.16	4.90	35.49
Mean ..	1.25	0.82	1.14	1.21	2.32	2.81	3.20	2.87	2.97	2.12	1.92	1.24	4.67	8.88	7.01	3.31	23.87

## FORT BRADY, MICHIGAN.

1836....	....	....	....	....	....	....	5.51	2.76	6.30	2.98	4.67	3.24	.....	.....	13.95	.....	.....
1837....	1.65	1.15	2.19	1.32	3.63	3.66	4.62	5.15	4.97	4.13	3.11	1.89	7.19	13.43	12.21	4.09	36.92
1838....	2.64	0.82	1.13	2.55	2.43	2.52	2.84	6.37	4.49	3.70	4.40	0.88	6.21	11.73	12.50	8.84	34.37
1839....	1.73	0.54	1.89	0.43	0.47	4.07	1.53	2.33	4.29	4.25	1.78	0.70	2.79	7.93	10.32	2.97	24.01
1840....	1.73	2.19	0.92	2.73	1.15	2.16	2.95	4.63	5.46	3.57	3.67	2.53	4.20	9.74	12.70	6.45	33.09
1841....	1.60	0.93	....	1.04	1.99	2.13	2.41	1.05	4.40	1.10	3.79	2.30	.....	5.59	9.29	4.83	22.74
1842....	2.51	1.47	1.43	1.33	1.42	3.77	2.51	1.06	3.50	2.56	3.88	1.16	4.18	7.64	9.44	5.14	26.40
1843....	2.07	1.06	0.68	1.45	2.42	3.14	2.53	0.41	3.00	5.72	3.19	1.53	4.55	6.08	11.91	4.71	27.25
1844....	1.96	0.43	1.66	3.07	2.87	4.26	2.21	4.93	4.81	2.18	3.50	2.49	7.60	11.43	10.49	4.88	34.45
1845....	1.66	1.88	2.20	2.26	2.19	1.43	4.36	3.94	2.64	3.95	1.87	1.28	6.74	9.73	8.47	3.82	29.76
1846....	1.01	0.94	2.51	2.65	2.03	0.95	....	....	4.13	3.90	2.65	2.00	7.19	.....	10.68	3.95	.....
1847....	1.53	0.50	1.00	2.00	3.00	3.35	3.79	3.83	5.71	1.20	2.62	2.83	6.00	10.97	9.53	4.11	30.61
1848....	1.92	1.53	0.97	1.30	4.14	....	....	....	....	....	....	....	6.41	.....	.....	.....	.....
1850....	1.83	0.83	1.83	2.15	0.70	2.92	3.15	4.09	1.90	4.00	1.85	2.91	4.63	15.16	10.25	5.57	35.56
1851....	2.74	1.25	0.54	2.23	3.11	2.91	5.99	3.67	1.82	1.04	6.12	7.55	6.13	12.57	14.95	11.57	16.30

FORT BRADY, MICHIGAN—Continued.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1852....	....	....	....	....	....	....	....	....	....	4.11	1.42	2.99	.....	.....	.....	.....	.....
1853....	0.92	1.19	0.48	0.73	0.74	3.94	3.27	3.19	2.61	2.16	1.77	0.74	1.95	10.40	6.54*	2.85	21.74
1854....	2.49	1.18	1.34	2.14	3.61	1.23	3.21	3.86	3.18	3.40	3.07	0.45	7.09	8.30	9.65	4.12	29.16
Mean ..	1.84	1.13	1.37	1.53	2.24	2.83	3.75	3.39	4.33	3.35	3.08	2.21	5.44	9.97	10.76	5.18	31.85

FORT HOWARD, WISCONSIN.

1836....	0.50	1.64	3.29	6.37	5.29	3.50	5.06	2.07	4.78	1.59	2.01	1.72	14.77	10.63	8.38	3.56	57.64
1837....	1.23	0.88	1.81	3.53	6.48	4.31	5.67	4.25	5.04	1.17	2.89	2.69	11.82	14.23	9.70	4.80	49.55
1838....	1.97	0.58	0.14	3.41	1.54	6.77	7.03	5.66	3.36	3.29	2.58	1.23	5.09	19.46	9.23	3.78	37.56
1839....	2.03	1.08	1.85	2.43	3.79	4.05	3.35	2.69	0.77	5.26	2.25	1.63	8.12	10.09	8.25	4.79	31.23
1840....	0.80	0.30	0.26	4.17	1.69	7.29	5.86	3.79	1.25	3.02	2.05	0.59	6.12	16.94	6.32	1.10	35.57
1841....	0.58	0.39	1.09	2.11	2.46	5.43	....	....	....	....	....	....	....	....	....	....	....
1850....	....	....	....	....	....	4.92	6.34	6.94	2.69	1.10	2.59	0.95	.....	18.20	6.38	.....	.....
1851....	1.12	1.50	0.78	1.58	3.50	3.15	5.07	2.67	3.26	1.10	2.26	0.28	10.86	10.89	6.62	2.90	31.47
1852....	1.77	0.66	3.87	2.97	2.15	....	....	....	....	....	....	....	8.99	.....	.....	.....	.....
Mean ..	1.19	0.87	1.70	3.33	3.97	4.93	5.51	4.01	3.11	2.36	2.37	1.20	9.00	14.45	7.84	3.96	34.65

FORT WINNEBAGO, WISCONSIN.

1836....	....	....	....	....	....	....	....	0.16	1.53	0.77	1.23	1.77	.....	.....	6.87	.....	.....
1837....	0.48	0.91	0.25	2.41	3.13	4.80	5.66	2.89	5.39	0.79	3.23	1.35	5.82	13.35	9.41	2.74	31.32
1838....	2.03	0.20	0.08	2.98	0.86	2.40	7.67	5.35	2.64	1.49	1.77	0.41	3.92	15.42	5.90	2.64	27.83
1839....	0.92	0.47	0.79	1.84	3.59	4.53	0.83	4.33	1.43	8.14	1.27	0.76	6.22	9.74	10.84	2.15	28.95
1840....	0.80	1.17	0.48	1.46	2.03	3.71	5.79	3.47	1.45	4.03	2.63	0.65	3.97	12.37	8.16	2.02	28.12
1841....	0.18	0.43	1.54	1.49	1.51	5.45	3.70	3.79	6.53	1.25	0.55	1.93	4.54	12.94	8.38	2.59	28.45
1842....	0.84	0.56	1.71	1.85	1.17	5.04	3.24	2.14	3.45	0.21	3.12	1.13	4.73	10.42	6.78	2.58	24.51
1843....	0.72	0.62	0.39	2.14	4.13	4.07	1.20	1.22	4.41	0.60	2.67	0.58	6.71	6.49	7.63	1.92	32.80
1844....	1.51	0.53	1.83	3.52	....	4.07	5.40	5.16	2.73	0.73	1.56	1.75	.....	14.63	5.02	3.84	.....
1845....	0.67	2.49	3.10	2.67	1.46	4.09	4.37	1.53	....	....	....	....	7.33	9.99	.....	.....	.....
Mean ..	0.91	0.82	1.07	2.26	2.25	4.24	4.21	3.01	3.62	2.00	2.01	1.09	5.53	11.46	7.63	2.82	27.49

FORT CRAWFORD, WISCONSIN.

1836....	....	....	....	....	3.60	1.10	3.20	2.30	6.40	1.30	6.70	1.69	.....	6.60	8.20	.....	.....
1837....	0.40	2.70	2.90	3.00	1.40	4.40	1.83	3.65	7.13	1.16	2.51	2.92	7.30	9.58	10.85	6.62	34.05
1838....	1.30	0.00	0.45	3.57	1.03	2.17	1.58	5.63	2.76	1.66	1.14	0.32	5.05	9.43	5.86	1.62	21.96
1839....	1.72	....	1.26	2.07	0.54	5.10	1.57	6.30	4.95	5.05	1.90	1.00	3.87	12.97	11.90	.....	51.46
1840....	1.40	1.00	0.20	3.62	2.75	2.57	2.97	6.91	1.90	5.85	1.96	0.12	6.57	12.45	9.71	2.52	31.25
1841....	0.19	0.47	5.76	2.04	1.75	2.36	7.75	3.65	2.45	1.21	0.14	3.23	9.55	13.79	3.80	3.94	31.05
1842....	1.29	1.13	2.00	4.03	6.20	7.03	1.00	6.43	3.53	0.03	3.47	2.00	12.23	14.51	7.13	4.42	38.34
1843....	0.70	0.93	0.58	1.60	2.82	3.10	2.20	4.13	4.90	1.33	2.82	0.47	5.00	9.44	9.05	2.10	25.53
1844....	2.60	0.87	1.42	3.56	4.71	4.01	3.81	6.06	2.46	0.76	1.42	2.39	9.69	15.88	4.64	5.85	38.36
1845....	1.10	2.79	2.73	3.36	2.40	5.50	3.90	1.35	....	....	....	....	8.49	19.73	.....	.....	.....
Mean ..	1.19	1.24	1.92	2.99	2.72	3.74	3.43	4.05	4.06	2.04	1.80	1.57	7.63	11.87	7.90	4.00	31.40



## FORT ATKINSON, IOWA.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring	Summer	Autumn.	Winter	Year.
1841...	....	....	....	...	5.55	5.88	10.14	5.09	2.85	1.81	0.86	1.11	.....	21.11	5.02	.. ..	.....
1845...	0.43	1.63	1.96	2.83	3.23	7.48	7.21	5.67	3.27	1.22	0.15	0.35	8.62	19.76	4.64	2.41	34.83
1846...	1.00	0.03	3.12	6.53	6.33	....	....	....	...	....	....	....	15.98	.....	.....	.....	.....
Mean ..	0.71	0.83	2.54	4.68	5.00	6.68	8.67	5.08	2.81	1.51	0.50	0.73	12.22	20.43	4.82	2.27	39.74

## FORT DES MOINES, IOWA.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring	Summer	Autumn.	Winter	Year.
1844....	....	....	....	....	....	7.63	3.52	....	4.13	1.00	0.82	2.25	.....	.....	4.45	.....	.....
1845....	1.00	1.32	1.42	3.83	1.61	5.50	0.51	2.34	3.04	....	....	....	6.83	8.35	.....	.....	.....
1846....	0.90	0.02	....	....	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....
Mean ..	0.95	0.67	1.42	3.83	1.61	6.53	2.01	2.34	3.53	1.00	0.32	2.25	6.86	10.93	4.90	3.87	26.56

## FORT SNELLING, MINNESOTA.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring	Summer	Autumn.	Winter	Year.
1836...	....	....	....	....	....	....	7.28	5.55	4.45	0.55	0.70	0.63	.....	.....	5.70	.....	.....
1837...	0.27	0.35	0.03	0.95	2.65	3.46	2.43	1.32	5.10	3.15	1.37	2.34	3.93	7.51	9.62	2.96	24.02
1838...	0.65	0.56	0.15	2.41	3.05	1.73	11.11	3.68	0.71	0.16	0.43	0.45	5.21	18.93	1.39	1.56	22.22
1839...	1.34	0.96	0.71	2.71	3.28	1.50	3.50	1.04	1.61	2.11	1.66	1.07	6.70	6.34	5.33	2.77	21.19
1840...	0.49	0.49	0.65	1.55	2.31	3.50	2.89	3.40	2.33	2.21	3.22	0.13	4.51	9.79	7.76	1.11	23.00
1841 ..	0.24	0.21	1.43	1.40	1.50	4.24	1.57	1.17	6.10	1.55	0.54	1.42	4.33	6.95	8.49	1.87	21.67
1842 ..	0.95	0.72	0.44	2.17	1.68	3.73	1.78	4.81	4.83	....	3.46	0.60	4.29	10.32	.....	2.27	.....
1843...	1.15	1.46	0.82	0.75	3.12	5.22	2.69	1.84	5.14	0.50	1.43	0.27	4.69	9.25	7.67	2.88	23.09
1844...	1.50	0.72	0.97	5.16	4.50	1.64	4.80	4.27	4.26	0.97	0.77	0.58	10.63	10.81	5.96	2.59	30.14
1845...	0.40	1.40	2.80	3.15	1.51	6.80	2.53	3.23	2.21	0.66	0.40	0.68	7.46	12.64	3.27	1.97	25.34
1846 ..	0.32	0.03	1.71	2.90	2.00	3.10	4.95	3.80	2.33	2.45	2.10	0.21	6.61	11.85	6.88	0.76	26.10
1847...	0.29	0.11	0.44	0.45	4.96	2.66	3.66	2.40	4.00	0.37	1.71	0.66	5.85	8.51	6.08	1.66	21.80
1848...	0.62	1.13	1.71	0.13	5.28	2.83	4.60	3.19	2.46	0.68	0.10	0.40	7.17	10.62	3.24	2.15	23.13
1849....	1.00	0.01	4.11	5.62	6.57	3.14	7.39	9.60	2.75	5.35	1.49	1.35	16.39	20.33	9.50	3.56	49.69
1850...	1.67	0.83	2.23	2.60	0.57	4.62	6.15	2.97	1.82	0.32	1.68	0.64	5.40	13.74	3.82	2.54	25.59
1851....	0.20	0.13	1.23	2.68	3.96	2.15	2.60	3.29	3.64	1.13	2.31	0.65	7.57	8.94	7.13	0.38	23.42
1852 ..	0.66	0.14	2.64	2.49	4.72	0.88	2.74	0.59	0.73	0.52	0.22	0.15	9.25	3.71	1.76	0.35	15.07
1853 ..	0.00	0.01	0.62	0.73	4.68	7.59	1.65	2.57	2.14	0.01	0.56	1.11	4.83	11.81	2.71	1.12	20.47
1854...	0.72	0.03	1.63	2.51	4.30	3.31	3.02	1.77	6.55	1.23	0.60	0.64	7.84	8.98	8.35	1.39	26.59
1855 ..	1.67	0.41	1.84	0.23	1.23	2.35	....	....	....	....	....	....	3.35	.....	.....	.....	.....
Mean ..	0.73	0.52	1.50	2.14	3.17	3.66	4.11	3.13	3.52	1.35	1.31	0.67	6.61	10.92	5.93	1.92	25.43

## FORT RIPLEY, (GAINES,) MINNESOTA.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring	Summer	Autumn.	Winter	Year.
1850 ...	1.36	0.91	1.05	2.67	1.52	6.00	11.92	2.51	1.77	1.45	3.65	0.51	5.24	20.43	6.87	2.73	35.32
1851....	1.41	0.24	0.26	0.97	5.56	5.59	....	3.15	8.74	1.93	2.82	0.34	6.79	.....	13.40	2.01	.....
1852....	0.13	0.42	6.61	2.97	3.93	2.10	3.92	1.37	6.49	1.27	3.10	2.57	12.94	7.39	10.77	3.42	34.52
1853....	0.15	0.34	1.03	1.31	1.45	5.72	4.45	2.64	3.91	0.95	1.15	0.63	3.52	15.71	5.44	1.15	26.12
1854....	0.67	0.07	0.79	0.97	4.34	3.63	0.62	1.69	1.40	0.91	0.24	0.15	6.10	5.99	5.55	0.55	18.49
1855....	1.41	0.23	1.12	0.36	1.65	4.88	....	...	...	....	...	....	3.16	.....	.....	.....	.....
Mean ..	0.86	0.37	1.80	1.42	3.09	5.15	5.20	2.27	4.92	1.80	2.20	0.90	6.31	12.62	8.42	2.18	29.43

FORT LEAVENWORTH, KANSAS.

	Jan.	Feb.	March	April	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.	Spring	Summer	Autumn	Winter	Year.
1836....	....	....	....	...	1.30	4.23	3.11	5.99	6.45	0.87	1.64	0.73	13.54	8.96	.....	.....	.....
1837....	0.11	2.73	2.76	1.63	3.32	6.20	4.29	1.00	7.80	3.40	2.70	2.60	7.71	11.40	13.90	5.44	85.45
1838....	1.80	1.00	1.90	1.80	2.60	6.13	2.18	6.66	0.30	0.40	1.81	0.20	5.80	14.97	2.51	3.00	26.28
1839....	1.08	0.78	1.98	3.99	3.51	5.29	5.12	1.95	0.76	6.05	1.29	1.52	9.43	12.86	8.10	8.38	33.32
1840....	0.73	0.74	1.27	2.62	3.34	6.62	2.65	4.98	3.48	3.89	1.60	0.22	7.23	14.25	6.97	1.69	52.14
1841....	0.04	0.23	1.91	4.38	0.56	2.95	2.50	2.33	5.52	3.25	....	0.05	6.55	7.78	.....	0.82	.....
1842....	0.01	0.60	0.99	2.84	1.39	5.05	3.15	6.06	1.02	0.26	3.22	1.10	5.22	14.86	4.50	1.71	26.29
1843....	0.12	0.10	1.35	5.53	2.29	0.52	0.57	0.13	3.19	1.04	0.05	1.05	9.17	1.22	4.28	1.27	15.94
1844....	0.50	1.63	3.40	3.29	8.53	12.00	8.08	4.80	1.60	0.40	3.62	0.39	15.13	24.88	5.62	2.49	45.12
1845....	0.60	2.20	0.73	2.40	2.30	15.80	0.01	1.70	6.70	1.80	0.82	0.00	5.43	17.51	9.82	2.89	34.56
1846....	0.40	0.20	1.10	3.90	3.20	4.16	2.61	0.08	3.88	1.03	1.14	2.05	8.20	6.85	6.05	2.65	23.75
1847....	0.69	1.30	0.48	2.79	7.18	5.15	1.20	0.50	0.82	0.00	0.27	1.15	10.45	6.85	0.59	3.14	21.03
1848....	1.45	1.40	1.50	0.91	3.50	6.76	3.25	3.05	7.60	0.74	4.33	3.50	5.91	13.06	12.67	6.35	38.00
1849....	2.90	0.63	3.49	2.40	5.10	2.26	6.03	5.80	7.56	3.44	2.80	0.56	10.90	14.09	13.80	4.66	42.85
1850....	1.10	2.21	3.64	1.74	2.32	5.99	1.63	2.27	0.72	0.85	3.84	0.76	7.70	9.89	5.41	4.07	27.07
1851....	0.54	0.96	1.03	1.00	6.40	8.16	6.78	5.02	1.10	1.68	3.18	1.96	7.43	19.96	7.96	3.46	38.81
1852....	0.96	0.28	1.85	5.50	4.71	6.53	4.60	4.22	1.61	2.64	3.83	0.60	11.56	15.85	7.78	1.84	36.53
1853....	0.01	0.80	0.15	2.36	3.39	5.95	8.21	5.01	1.47	0.82	2.07	0.76	5.90	14.17	4.06	1.97	25.20
1854....	0.04	1.78	1.33	3.85	5.55	4.59	0.18	1.07	2.11	3.20	1.20	0.09	10.23	5.75	6.51	1.91	24.40
1855....	0.59	0.20	0.42	0.27	1.93	1.69	1.70	....	....	....	....	....	2.67	.....	.....	.....	.....
Mean ..	0.72	1.01	1.61	2.74	3.62	5.80	3.15	3.29	3.32	1.84	2.17	1.02	7.97	12.24	7.83	2.75	30.20

FORT DODGE, IOWA.

1851....	....	....	....	....	....	....	....	1.95	2.59	2.43	2.84	0.71	.....	.....	7.86	.....	....
1852....	1.09	0.58	1.55	2.16	2.05	5.16	1.57	0.89	2.51	4.10	1.92	2.27	5.76	7.62	8.83	3.94	25.85
1853....	0.20	0.26	1.31	3.92	4.84	....	....	....	....	....	....	....	10.07	.....	.....	.....	.....
Mean ..	0.65	0.42	1.43	3.04	3.45	5.16	1.57	1.42	2.55	3.26	2.88	1.99	7.92	8.15	8.19	3.06	27.82

FORT KEARNY, NEBRASKA.

1849....	....	....	6.12	7.86	10.74	4.00	7.70	6.05	0.27	1.80	0.10	0.10	21.72	17.75	2.17	.....	.....
1850....	0.47	0.06	1.06	1.67	2.88	9.93	5.38	1.66	0.43	0.26	1.57	0.30	5.01	16.97	2.26	0.88	25.07
1851....	1.15	0.97	0.14	0.73	9.43	3.50	2.86	2.73	2.09	0.52	1.00	0.76	10.80	9.14	4.12	2.88	26.44
1852....	0.12	0.25	0.28	0.73	5.23	3.62	2.69	1.84	2.17	1.35	2.24	0.73	6.24	7.55	5.76	1.10	20.65
1853....	0.00	0.02	0.08	6.10	8.46	2.47	8.23	2.21	0.94	0.26	1.04	0.68	14.64	12.96	2.20	0.10	29.90
1854 ..	0.23	1.33	1.87	2.56	4.15	5.40	3.51	1.13	4.60	1.07	0.75	0.00	8.58	10.69	6.42	1.56	26.65
1855....	1.00	0.25	1.95	0.68	4.91	2.29	....	....	....	....	....	....	6.94	.....	.....	.....	.....
Mean ..	0.50	0.48	1.56	2.63	6.57	4.36	5.67	2.62	1.83	0.88	1.11	0.83	10.88	12.65	3.82	1.31	27.98

## FORT LARAMIE, NEBRASKA.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn	Winter.	Year.
1849....	....	....	....	....	....	....	...	....	0.21	2.72	0.24	0.38	.....	.....	3.17	.....	.....
1850....	0.30	0.42	1.31	1.03	1.41	1.40	1.80	0.51	0.22	0.23	0.23	....	3.75	3.71	0.72	.....	.....
1851....	...	....	....	0.16	4.21	0.83	0.82	0.78	0.42	0.36	0.52	0.58	.....	1.43	1.30	.....	.....
1852....	0.72	1.10	1.55	1.25	7.29	4.08	1.88	1.46	2.74	1.70	6.42	1.23	10.09	7.42	10.86	3.05	31.42
1853....	0.08	0.57	1.78	4.53	12.19	4.95	1.86	0.55	2.80	0.68	0.08	0.71	18.50	7.36	3.56	1.36	80.78
1854....	0.18	0.40	0.80	3.98	4.46	3.67	3.26	1.27	1.60	1.56	0.73	0.05	9.24	8.20	4.19	0.63	22.26
1855....	0.04	1.06	1.41	0.65	2.79	3.25	1.45	....	....	....	....	....	4.85	.....	.....	.....	.....
Mean ..	0.27	0.71	1.37	1.93	5.89	2.95	1.83	0.92	1.33	1.26	1.37	0.65	8.69	5.70	3.96	1.63	19.93
1852....	....	....	....	....	....	....	....	5.10	3.55	6.91	1.39	1.60	.....	.....	12.05	.....	.....
1853....	0.04	0.49	0.96	3.83	9.34	4.85	....	0.50	....	....	....	....	13.68	7.15	.....	2.13	35.01

The last observations, for 1852 and 1853, were at *Fort Atkinson*, on the Plains, crossing of Arkansas river.

## FORT ARBUCKLE, INDIAN TERRITORY.

1850....	....	....	....	....	....	....	....	....	....	1.70	5.40	1.25	.....	.....	.....	.....	.....
1851....	0.01	5.40	0.20	2.71	2.61	2.19	1.55	1.16	1.60	1.07	3.39	2.35	5.52	4.90	4.06	7.76	22.24?
1852....	1.86	4.21	1.21	1.41	7.30	5.30	5.09	4.82	5.04	7.16	2.50	0.12	9.92	15.21	14.66	6.29	46.03
1853....	0.49	1.88	0.82	1.04	5.31	4.57	3.27	1.30	3.16	3.32	1.05	0.97	6.67	9.14	7.53	3.34	26.63
1854....	0.01	2.30	3.33	2.93	6.60	4.33	0.00	2.14	2.12	0.55	3.46	0.40	12.91	6.47	6.13	2.71	28.22
1855....	0.20	1.28	0.35	2.23	3.13	3.38	3.50	....	....	....	....	....	5.76	.....	.....	.....	.....
Mean ..	0.51	3.01	1.08	2.08	4.99	3.95	2.63	2.35	2.93	2.76	3.16	1.02	8.15	8.98	8.90	4.54	30.57

## FORT BELKNAP, TEXAS.

1852....	....	...	....	....	....	....	....	....	....	5.90	3.15	0.05	.....	.....	.....	.....	.....
1853....	0.06	1.33	0.96	2.03	6.19	2.74	2.27	0.12	1.77	4.89	1.03	1.75	9.13	5.13	7.69	3.14	25.14
1854....	0.11	1.10	1.42	1.75	4.97	3.33	0.00	0.75	1.53	0.59	0.05	0.05	8.14	9.08	2.17	1.26	20.65
1855....	0.01	0.78	0.10	0.30	3.55	3.15	....	...	....	....	....	....	3.95	.....	.....	.....	.....
Mean ..	0.06	1.07	0.83	1.36	4.90	4.74	1.14	0.43	1.05	3.79	1.41	0.62	7.09	6.31	6.85	1.75	22.00

## FORT WORTH, TEXAS.

1849....	....	....	....	....	....	....	....	....	....	....	....	1.90	.....	.....	.....	.....	.....
1850....	0.60	0.80	1.20	4.70	6.90	7.30	0.50	3.70	0.51	2.24	4.90	5.10	12.80	11.50	7.65	6.00	37.95
1851....	2.70	10.80	4.66	6.61	9.27	0.22	0.16	0.06	0.06	2.24	4.92	0.79	20.54	0.41	7.22	14.29	42.49
1852....	1.35	3.75	5.20	1.73	4.27	3.81	3.14	6.41	5.60	5.40	2.60	0.10	11.10	13.36	13.60	5.20	43.26
1853....	1.60	3.30	3.35	4.18	5.94	3.60	5.72	0.60	....	....	....	....	13.50	9.92	.....	.....	.....
Mean ..	1.56	4.34	3.61	4.30	6.59	3.73	2.33	2.69	2.06	3.29	4.14	1.97	14.50	8.80	9.49	8.67	40.86

## PHANTOM HILL, (CLEAR FORK OF BRAZOS,) TEXAS.

1852....	...	....	....	....	....	....	....	....	4.82	4.81	2.45	0.00	.....	.....	12.08	.....	.....
1853....	0.52	1.30	0.54	0.45	2.85	2.90	1.15	0.03	0.23	2.01	0.23	1.87	3.34	4.08	2.52	3.69	14.13
1854....	0.00	0.30	...	....	....	....	...	....	....	....	....	....	.....	.....	.....	.....	.....
Mean ..	0.26	0.80	0.54	0.45	2.85	2.90	1.15	0.03	2.55	3.41	1.34	0.94	3.54	4.08	7.80	2.00	17.22



FORT CHADBOURNE, TEXAS.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring	Summer	Autumn.	Winter.	Year.
1852....	....	....	....	....	6.25	5.00	5.98	2.32	4.01	3.64	0.80	0.00	.....	13.30	8.45	.....	.....
1853....	0.70	1.25	1.61	0.80	6.48	5.48	2.80	0.65	1.76	2.87	0.19	2.67	8.89	9.18	4.82	4.62	27.46
1854....	0.00	0.90	0.48	0.56	5.76	4.67	1.81	4.80	4.09	3.80	6.80	2.60	6.80	10.28	13.69	3.50	34.27
1855....	1.10	2.50	0.15	3.35	6.83	3.31	....	....	....	....	....	....	9.53	.....	.....	.....	.....
Mean ..	0.60	1.55	0.75	1.57	6.20	4.61	3.36	2.49	3.29	3.27	2.43	1.76	5.52	10.46	8.99	3.91	27.88

FORT GRAHAM, TEXAS.

1850....	....	....	1.35	4.25	2.57	4.83	1.50	3.95	0.60	3.77	1.09	11.03	8.17	10.23	5.46	.....	.....
1851....	1.80	6.86	3.63	7.88	3.65	0.32	0.11	0.21	0.26	5.25	7.49	4.40	14.56	0.64	12.91	13.26	41.37
1852....	0.64	5.25	3.75	4.00	2.65	3.68	4.90	3.76	1.53	3.69	5.70	0.21	15.80	12.34	10.92	6.20	44.76
1853....	1.83	3.61	4.48	2.00	3.35	2.00	2.08	0.32	....	....	....	....	9.83	4.40	.....	.....	.....
Mean ..	1.42	5.24	4.55	4.53	2.90	2.71	2.15	2.06	0.80	4.24	4.73	5.25	11.93	6.02	9.77	11.91	40.58

FORT CROGHAN, TEXAS.

1849....	....	....	....	....	....	3.70	3.00	0.40	1.20	1.30	1.40	0.90	.....	7.10	3.90	.....	.....
1850....	1.00	0.90	3.10	3.40	5.00	5.60	1.60	0.69	0.45	0.28	1.62	2.56	11.50	7.89	1.75	4.46	25.60
1851....	1.09	5.01	3.54	7.05	1.06	1.06	2.99	1.00	1.33	3.52	9.80	7.40	11.65	5.05	14.67	13.50	44.87
1852....	1.70	6.00	9.18	2.79	2.21	3.78	3.75	3.00	5.96	3.35	3.33	0.57	14.18	10.62	12.64	7.27	44.71
1853....	1.97	6.52	3.07	2.28	3.78	2.52	5.79	0.20	....	....	....	....	9.13	8.61	.....	.....	.....
Mean ..	1.44	4.61	4.72	3.88	3.01	3.33	3.39	1.08	2.24	2.11	3.59	2.56	11.61	7.80	8.24	8.91	36.56

FORTS MARTIN SCOTT, MASON, TERRETT, AND McKAVETT, TEXAS.

1850....	1.07	0.69	1.57	4.60	3.45	10.28	1.71	0.37	1.18	0.99	3.87	2.74	9.62	12.36	6.64	5.50	33.52
1851....	0.73	5.14	3.48	5.37	1.15	0.03	0.80	1.20	1.44	1.15	1.50	1.00	13.03	2.08	4.09	6.87	26.07
1852....	0.60	3.10	12.40	....	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....
Mean ..	0.80	2.93	5.82	6.48	2.31	5.18	1.25	0.73	1.31	1.07	2.68	1.87	14.61	7.21	5.06	5.65	32.53
M. 1852....	....	....	....	1.90	8.94	3.46	6.64	1.54	4.70	2.54	1.50	0.01	.....	11.64	7.74	.....	.....
1853....	1.04	2.01	1.52	2.89	1.21	7.58	6.48	1.69	1.14	3.07	0.12	....	5.62	15.75	4.33	.....	.....
T. 1852....	....	....	....	1.08	5.15	4.27	3.04	1.61	5.72	3.92	1.23	0.00	.....	8.92	10.87	.....	.....
1853....	0.80	1.54	1.15	0.86	2.80	6.00	3.63	1.83	0.10	4.50	0.04	1.53	4.81	11.51	4.64	3.87	24.83
McK. 1852....	....	....	....	0.59	4.75	4.84	1.84	0.85	3.42	5.26	1.59	0.01	.....	7.55	10.27	.....	.....
1853....	1.75	2.94	1.52	2.00	2.25	5.49	4.03	1.65	....	....	....	....	5.77	11.17	.....	.....	.....
1854....	0.01	0.77	2.10	0.28	3.72	0.15	2.91	0.04	3.86	0.79	1.19	0.95	6.10	3.10	5.84	1.73	16.77
1855....	0.09	1.00	0.08	2.29	2.63	1.19	....	....	....	....	....	....	5.00	.....	.....	.....	.....
Mean ..	0.62	1.57	1.23	1.29	3.04	2.92	2.92	0.85	3.64	3.02	1.89	0.48	5.86	6.69	8.05	2.67	23.27

## SAN ANTONIO, TEXAS.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring	Summer	Autumn	Winter.	Year.
1849 ...	....	....	....	....	....	....	...	...	6.12	0.80	5.53	1.22	.....	.....	11.95	.....	.....
1850....	0.64	2.07	1.37	3.34	3.22	9.63	3.10	0.17	0.39	0.81	2.34	2.90	7.89	12.90	3.54	5.61	29.93
1851....	0.75	6.86	1.45	4.37	2.80	3.74	3.07	0.60	1.20	0.49	3.39	2.30	8.62	7.41	4.90	9.91	30.84
1852....	1.00	4.30	6.00	0.70	2.66	5.09	3.53	1.75	3.49	2.70	....	....	9.36	10.37	.....	.....	.....
Mean ..	0.80	4.41	2.94	2.80	2.89	6.15	3.23	0.84	2.89	1.05	3.72	2.14	8.63	10.23	7.57	7.5	33.77

## CORPUS CHRISTI, AND FORTS EWELL AND MERRILL.

1846 ..	3.96	2.37	1.55	3.71	3.44	6.65	3.02	5.43	10.49	....	....	....	8.30	15.16	.....	.....	.....
1849....	....	....	....	....	....	....	...	2.25	4.65	2.04	0.22	1.34	.....	.....	6.91	.....	.....
1851....	....	....	...	4.32	2.53	5.52	3.97	0.23	4.96	2.71	1.50	1.19	....	9.72	9.56	.....	.....
1854....	....	....	....	....	8.07	4.71	7.69	3.68	6.82	....	...	....	.....	16.08	.....	.....	.....
Mean ..	3.96	2.37	1.25	4.01	4.63	5.63	4.89	2.91	6.73	2.37	1.05	1.26	9.94	13.43	10.15	7.59	41.11
1852....	....	....	....	....	....	....	...	....	1.41	0.15	0.45	....	.....	.....	.....	.....	.....
1853....	1.30	6.60	1.05	2.25	3.35	9.65	2.22	1.65	5.25	3.32	0.83	1.87	6.65	13.52	9.40	9.77	29.34
1854....	0.22	2.86	0.38	0.00	6.88	6.05	3.58	3.21	4.68	...	....	....	7.26	12.84	.....	.....	.....
Mean ..	0.76	4.73	0.71	1.12	5.11	7.85	2.90	2.43	4.96	2.36	0.49	1.16	6.94	13.13	7.81	6.65	34.53
1851....	....	....	....	3.47	1.41	1.83	4.19	1.81	2.93	0.37	0.85	0.56	....	7.33	4.15	.....	.....
1852....	....	...	....	....	....	1.13	8.76	....	....	....	...	....	.....	.....	.....	.....	.....
1853....	....	....	....	....	....	....	....	5.75	5.86	3.12	1.40	1.18	....	.....	10.33	.....	.....
1854....	0.11	1.99	0.05	1.16	7.66	4.70	5.44	3.13	5.01	0.64	3.20	2.13	8.87	13.29	8.85	4.23	35.24
1855....	0.35	2.19	0.13	0.23	1.21	8.75	....	....	....	....	....	....	1.57	.....	.....	.....	.....
Mean ..	0.23	2.09	0.09	1.62	3.43	4.10	6.13	3.40	4.60	1.33	1.82	1.93	5.14	13.63	7.89	4.23	30.82

## FORT BROWN, TEXAS, (MATAMOROS.)

1850....	4.30	3.80	2.30	0.05	2.20	0.06	1.16	0.01	0.25	5.79	0.69	0.15	4.55	1.23	6.73	8.23	20.76
1851....	0.95	1.20	0.40	1.15	0.90	2.35	3.65	1.50	5.60	4.10	3.00	4.70	2.45	7.83	12.10	6.85	29.30
1852....	0.50	0.60	0.35	0.00	4.05	5.05	0.70	3.90	8.50	4.95	0.90	0.00	4.40	9.65	14.35	1.10	29.50
1853....	0.00	1.60	0.00	2.20	0.10	1.70	0.00	3.10	8.00	7.75	1.30	0.65	2.30	4.80	17.05	2.25	26.40
1854....	0.45	1.50	1.15	0.05	4.10	7.65	4.25	5.00	11.31	5.79	7.47	1.83	5.30	16.90	24.57	3.83	50.60
1855....	3.47	4.83	3.03	0.00	1.92	10.47	....	....	....	...	....	....	4.95	.....	.....	.....	.....
Mean ..	1.61	2.25	1.20	0.56	2.21	4.55	1.95	2.76	6.73	5.63	2.67	1.43	3.97	9.26	15.08	5.34	33.65

## RINGGOLD BARRACKS, TEXAS.

1849....	....	....	....	....	....	....	....	....	4.43	3.02	0.30	0.94	.....	.....	7.82	....	.....
1850....	3.14	0.61	1.93	0.79	4.55	2.76	0.17	0.11	0.03	0.58	2.91	0.01	7.27	3.04	3.57	3.76	17.64
1851 ...	0.81	0.69	0.03	1.21	0.20	1.21	2.20	0.02	5.21	1.20	0.12	1.15	1.44	3.43	6.53	2.63	14.03
1852....	1.00	0.88	0.65	0.63	2.23	0.96	0.82	1.44	4.24	4.73	0.01	0.03	3.61	3.22	9.03	1.96	17.82
1853. ..	0.70	2.33	0.69	3.79	3.91	1.45	0.15	4.34	2.32	2.40	0.19	0.91	7.79	5.94	4.91	3.94	22.53
1854....	0.70	1.69	0.22	0.00	2.83	10.98	4.06	1.53	3.02	0.92	2.10	0.68	3.05	16.89	6.04	3.07	29.05
1855...	1.06	0.63	1.43	0.00	2.40	....	5.38	....	....	....	....	....	3.88	.....	.....	.....	.....
Mean ..	1.24	1.13	0.72	1.08	2.69	3.47	2.13	1.50	3.22	2.15	0.94	0.63	4.19	7.10	6.31	3.05	20.95

FORT McINTOSH, TEXAS.

	Jan.	Feb.	March.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn.	Winter.	Year.
1849....	....	....	....	....	....	....	2.95	4.70	3.74	0.46	0.83	0.35	.....	.....	5.03	.....	.. ...
1850....	0.39	0.72	0.46	0.51	3.70	4.93	1.19	0.07	0.00	2.21	2.68	0.49	4.67	6.19	4.89	1.60	17.35
1851....	0.11	1.69	0.95	1.35	0.37	3.36	0.78	0.00	2.73	1.37	0.87	0.65	2.67	4.14	4.37	2.45	14.23
1852....	0.46	1.05	1.41	0.00	1.18	1.19	1.52	0.23	2.06	1.13	0.24	0.66	3.59	2.94	3.43	1.57	11.53
1853....	0.30	1.99	0.06	4.32	1.57	2.43	4.51	2.22	4.24	0.21	0.01	0.92	5.95	9.16	4.46	3.21	22.75
1854....	0.05	1.90	0.30	0.00	5.02	4.54	3.95	0.20	5.34	0.35	1.83	0.42	5.32	8.69	7.57	2.37	23.95
1855....	0.25	1.40	0.33	0.01	2.88	5.18	....	....	....	....	....	....	3.22	.....	.....	.....	.....
Mean....	0.26	1.46	0.59	1.03	2.45	3.61	2.48	1.24	3.62	0.96	1.08	0.48	4.07	7.33	5.06	2.20	18.66

FORT DUNCAN, TEXAS.

	Jan.	Feb.	March.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn.	Winter.	Year.
1849....	....	....	....	....	....	....	....	....	....	0.03	1.20	0.40	.....	.....	.....	.....	.....
1850....	0.40	0.12	0.02	0.58	1.00	5.51	2.85	0.60	0.10	1.30	3.70	1.40	2.00	8.96	5.10	1.92	17.98
1851....	0.70	2.32	0.23	0.88	1.15	2.30	1.10	0.70	1.36	1.50	1.20	0.68	2.26	4.10	4.06	3.70	14.12
1852....	0.28	2.30	6.27	0.00	2.13	2.81	6.70	0.32	6.10	1.22	0.24	0.00	8.40	9.83	7.56	2.58	28.37
1853....	0.13	1.30	0.01	2.10	0.75	10.70	5.28	2.15	4.05	4.10	0.05	2.69	2.86	18.13	8.20	4.12	33.31
1854....	0.05	0.69	1.50	0.00	2.53	6.83	0.83	0.90	4.81	0.40	3.28	0.18	4.03	8.56	8.49	0.92	22.00
1855....	0.00	0.91	0.01	0.28	1.44	....	....	....	....	....	....	...	1.73	.....	.....	.....	.....
Mean....	0.26	1.27	1.34	0.71	1.50	5.63	3.35	0.93	3.28	1.43	1.61	0.89	3.55	9.91	6.32	2.42	22.20

FORT INGE, TEXAS.

	Jan.	Feb.	March.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn.	Winter.	Year.
1849....	....	....	....	....	....	....	....	....	....	....	2.05	2.30	.....	.....	.....	.....	.....
1850....	0.38	0.71	1.42	1.11	1.07	7.00	2.70	3.19	1.50	1.70	3.60	2.10	2.60	12.89	6.80	3.19	25.48
1851....	....	3.54	1.45	2.95	1.08	0.73	2.84	3.53	0.73	1.50	1.43	0.29	5.48	7.10	3.66	.....	.....
1852....	0.34	1.40	2.62	0.15	5.76	8.07	6.82	0.12	2.83	3.19	1.52	0.00	8.53	15.01	7.54	1.74	32.82
1853....	2.16	3.58	1.51	2.42	3.28	9.00	4.97	1.39	1.20	6.76	0.15	1.02	7.21	15.56	8.11	6.76	37.64
1854....	0.20	2.15	3.00	0.75	3.88	2.09	0.97	1.67	4.80	0.33	3.71	0.50	7.63	4.73	8.84	2.85	24.08
1855....	0.10	1.86	0.75	0.17	....	....	....	....	...	....	....	....	.....	.....	.....	.....	.....
Mean....	0.64	2.21	1.79	1.26	3.01	5.38	3.66	2.02	2.21	2.70	2.08	1.03	6.06	11.06	6.99	3.88	27.99

FORT LINCOLN, TEXAS.

	Jan.	Feb.	March.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn.	Winter.	Year.
1850....	....	....	....	0.50	2.50	....	..	....	2.80	....	....	....	.....	.....	.....	.....	.....
1851....	0.00	5.05	2.11	4.86	1.90	0.76	0.89	0.39	0.27	1.36	2.01	0.98	8.87	2.04	3.64	6.03	20.58
1852....	0.26	2.96	4.90	0.23	4.26	3.38	1.10	....	....	....	....	....	9.39	.....	.....	.....	.....

FORT CLARK, TEXAS.

	Jan.	Feb.	March.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn.	Winter.	Year.
1852....	....	....	....	....	....	....	....	0.87	3.50	2.09	1.91	0.00	.....	.....	7.70	.....	.....
1853....	0.88	1.18	0.65	2.50	1.16	10.21	3.87	2.75	0.13	4.00	0.21	1.60	4.31	16.83	1.44	3.66	29.14
1854....	0.00	0.94	1.48	0.60	2.65	0.11	0.08	0.95	3.49	0.55	3.22	0.35	4.73	1.14	7.96	1.29	14.42
1855....	0.01	1.96	0.45	0.31	4.29	4.77	....	....	....	....	....	....	.....	.....	.....	.....	.....
Mean....	0.30	1.36	0.86	1.14	2.70	5.03	1.98	1.52	2.37	2.21	1.78	0.65	4.60	8.53	6.36	2.31	21.80



EL PASO AND FORT BLISS, NEW MEXICO.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1850....	....	....	....	....	....	....	....	0.70	0.05	0.60	4.60	1.10	.....	.....	5.25	.....	.....
1851....	0.00	0.90	0.00	0.00	0.70	0.02	1.05	2.49	....	....	....	....	0.70	4.56	.....	.....	.....
1854....	....	....	....	....	....	....	0.10	5.71	3.70	1.54	0.00	0.50	.....	.....	5.24	.....	.....
Mean...	0.00	0.90	0.00	0.00	0.70	0.02	0.57	2.97	1.88	1.07	2.30	0.80	0.70	3.56	5.25	1.70	11.21

The observations nominally at *El Paso* to August, 1851, were taken at points on the north side of the Rio Grande, opposite the Mexican town of El Paso.

FORTS FILLMORE, WEBSTER, AND THORN, NEW MEXICO.

1851....	....	....	....	....	....	....	....	....	1.40	0.11	2.13	1.74	.....	.....	3.64	.....	.....
1852....	....	0.29	0.04	0.20	0.40	1.74	3.84	1.00	1.47	0.77	2.66	0.00	0.64	6.58	4.90	.....	.....
1853....	0.04	0.10	0.03	0.01	0.05	0.28	2.80	1.83	1.21	0.90	1.15	0.64	0.09	4.91	3.26	0.78	9.04
1854....	0.00	0.00	0.65	0.10	0.86	0.05	0.87	1.38	0.95	0.39	0.07	0.15	1.61	2.30	2.01	0.15	6.07
1855....	0.00	0.00	0.12	0.45	0.05	0.07	....	....	....	....	....	....	0.62	.....	.....	.....	.....
F. Mean	0.01	0.10	0.21	0.20	0.34	0.54	2.50	1.40	1.26	0.54	1.50	0.63	0.75	4.44	3.30	0.74	9.23
W. 1852	....	1.51	0.13	4.45	1.23	4.89	4.79	4.29	3.47	1.19	3.48	0.30	4.81	13.97	8.14	....	.....
W. 1853	0.40	0.50	0.00	0.00	1.05	1.08	2.55	1.21	1.26	0.40	0.26	0.08	1.05	4.84	1.92	0.98	8.79
T. 1854	0.00	0.00	0.14	0.20	1.10	0.08	2.23	6.01	3.50	0.00	0.99	0.35	1.44	8.32	4.49	0.35	14.60
T. 1855	0.09	0.20	0.80	0.25	0.05	....	....	....	....	....	....	....	1.10	.....	.....	.....	.....

FORT CONRAD AND SOCORRO, NEW MEXICO.

1851....	....	....	....	....	....	....	....	....	....	0.03	0.09	0.39	.....	.....	.....	.....	.....
1852....	0.01	0.03	0.00	0.07	0.25	2.15	0.65	1.32	1.10	1.63	1.34	0.08	0.32	4.12	4.07	0.12	8.63
1853....	0.23	0.39	0.38	0.00	0.35	0.74	2.78	1.20	0.53	0.00	0.59	0.67	0.73	4.72	1.12	1.29	7.86
1854....	0.00	0.00	0.05	0.01	0.62	0.01	0.41	1.02	2.13	0.34	1.09	0.08	0.68	1.44	3.56	0.08	5.76
1855....	0.00	0.01	0.12	0.08	0.10	0.21	....	....	....	....	....	....	0.30	.....	.....	.....	.....
Mean...	0.06	0.11	0.14	0.04	0.33	0.78	1.28	1.18	1.25	0.50	0.78	0.31	0.51	3.24	2.53	0.48	6.76
S. 1849	....	....	....	....	....	....	....	....	....	....	1.76	0.80	.....	.....	.....	.....	.....
1850....	0.05	0.52	0.60	0.42	0.12	0.17	1.29	0.54	0.24	1.81	0.92	0.44	1.14	2.00	2.97	1.01	7.12
1851....	0.02	0.45	....	0.45	0.01	0.00	0.40	2.07	....	....	....	....	.....	2.47	.....	.....	.....

ALBUQUERQUE, NEW MEXICO.

1850....	....	0.05	0.01	0.02	0.21	0.18	1.26	0.45	0.51	0.28	1.02	0.61	0.24	1.89	1.81	.....	....
1851....	0.07	0.56	0.42	0.04	0.03	0.00	0.30	....	....	....	....	....	0.49	.....	.....	.....	.....
1852....	....	....	....	0.70	0.07	8.15	0.07	4.06	0.19	0.35	0.16	0.02	0.77	12.28	0.70	.....	.....
1853....	0.00	0.00	0.01	0.00	0.04	0.00	2.57	3.80	0.07	0.00	0.31	0.30	0.05	6.37	0.38	0.30	7.10
1854....	0.30	0.00	0.43	0.39	1.19	0.28	2.59	1.19	2.67	1.37	1.35	0.92	2.01	4.06	5.39	1.05	12.51
1855....	0.20	0.40	1.02	0.74	0.89	....	....	....	....	....	....	....	2.65	.....	.....	.....	....
Mean...	0.14	0.90	0.38	0.32	0.40	1.72	1.36	2.37	0.86	0.50	0.71	0.46	1.10	5.45	2.07	0.80	9.42

CEBOLLETA, LAGUNA, NEW MEXICO.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1849....	....	....	....	....	....	....	....	....	....	....	....	0.40	.....	.....	.....	.....	.....
1850....	0.45	1.10	0.63	0.55	0.23	0.28	0.85	0.26	1.37	1.58	0.55	1.84	1.41	1.39	3.50	3.39	9.69
1851....	0.15	2.11	0.10	0.94	0.01	0.00	0.25	2.18	5.82	1.60	0.81	1.15	1.05	2.43	8.23	3.41	15.12
Mean...	0.30	1.61	0.36	0.75	0.12	0.14	0.55	1.22	3.60	1.59	0.68	1.13	1.23	1.91	5.87	3.04	12.05

SANTE FE, NEW MEXICO.

1850....	....	1.26	1.00	0.65	....	....	0.98	0.92	....	0.38	....	1.60	.....	.....	.....	.....	.....
1852....	....	....	..	....	....	..	....	....	0.91	2.55	1.65	1.36	.....	.....	5.11	.....	.....
1853....	0.00	0.69	0.50	0.00	0.98	1.88	7.45	5.42	2.68	0.97	0.43	0.77	1.48	14.75	4.08	1.46	21.77
1854....	0.36	0.12	2.01	1.68	1.16	0.32	4.11	3.86	4.06	2.50	3.54	1.08	4.85	8.29	10.10	1.56	24.80
1855....	0.57	0.20	1.63	0.85	0.68	1.77	....	....	....	....	....	....	3.16	.....	.....	.....	.....
Mean...	0.31	0.57	1.29	0.80	0.74	1.32	4.18	3.40	2.55	1.60	1.87	1.20	2.83	8.90	6.02	2.08	19.83

LAS VEGAS AND FORT UNION, NEW MEXICO.

1850....	....	....	....	0.02	....	....	....	....	0.00	0.00	0.12	3.12	.....	.....	0.12	.....	.....
1851....	....	4.23?	0.01	2.11	2.82	0.00	5.10	....	4.63	0.61	1.97	0.33	4.94	.....	7.21	.....	.....
1852....	0.48	0.59	0.00	0.24	0.73	7.05	2.73	5.49	3.04	3.44	2.83	0.02	0.97	15.27	9.31	1.09	26.64
1853....	0.19	0.08	0.77	0.32	0.91	0.11	4.19	3.42	1.59	1.29	0.38	0.18	2.00	7.72	3.26	0.45	13.43
1854....	0.07	0.02	0.63	0.46	0.50	0.69	3.98	1.75	2.99	0.88	1.80	0.60	1.59	6.42	5.67	0.69	14.37
1855....	0.01	0.01	0.43	0.01	2.88	2.12	4.37	....	....	....	....	....	3.32	.....	.....	.....	.....
Mean...	0.19	0.99	0.37	0.53	1.57	2.00	4.07	3.55	2.45	1.25	1.42	0.85	2.47	9.62	5.12	2.03	19.24

CANTONMENT BURGWIN AND FORT MASSACHUSETTS, NEW MEXICO.

B. 1854.	....	....	....	....	....	....	....	....	0.21	0.13	1.03	0.06	.....	..	1.37	.....	.....
B. 1855.	1.06	1.04	0.20	0.08	0.20	0.83	2.64	....	....	....	....	....	0.48	.....	.....	.....	.....
1852....	....	....	....	....	....	....	....	....	....	1.84	6.34	1.45	.....	.....	.....	.....	.....
1853....	0.22	0.76	0.94	0.39	1.49	1.11	3.04	1.48	1.25	....	....	....	2.82	5.63	.....	.....	.....
1854....	....	....	....	....	3.93	0.24	2.14	2.61	1.53	0.35	....	2.30	.....	4.99	.....	.....	.....
1855....	0.25	0.67	....	0.45	1.00	0.86	....	....	....	....	....	....	.....	.....	.....	.....	.....
Mean...	0.23	0.72	0.94	0.42	2.14	0.74	2.59	2.05	1.39	1.10	6.34	1.88	3.50	5.38	8.83	2.83	20.54

The mean embraces the observations at Fort Massachusetts only.

FORT DEFIANCE, NEW MEXICO.

1852....	....	....	...	....	0.89	2.35	0.90	1.30	1.82	1.60	1.22	1.30	.....	4.55	4.64	.....	.....
1853....	0.40	0.08	1.29	0.10	1.44	0.43	1.43	4.65	2.64	0.94	0.22	0.25	2.83	6.51	3.80	0.73	13.87
1854....	2.00	0.15	0.45	0.93	0.51	1.24	3.94	5.24	3.47	0.62	1.49	1.20	1.49	10.42	5.58	3.35	20.84
1855....	0.83	1.71	3.30	0.50	0.06	0.43	....	...	....	....	....	....	3.86	.....	.....	.....	.....
Mean...	1.08	0.65	1.68	0.51	0.72	1.11	1.57	3.73	2.64	1.05	0.98	0.92	2.91	6.41	4.67	2.65	16.64

## FORT YUMA, CALIFORNIA.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer	Autumn	Winter.	Year.
1851....	0.00	0.01	0.00	0.27	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....
1852....	....	....	....	....	....	0.00	0.28	0.33	1.45	0.00	0.35	0.04	.....	0.61	1.80	....	.....
1853....	0.00	0.00	0.01	0.00	0.00	0.00	0.25	0.69	0.13	0.00	0.18	0.52	0.01	0.94	0.31	0.52	1.78
1854....	0.00	0.28	0.80	0.00	0.00	0.00	0.01	2.37	0.17	0.30	0.00	0.57	0.80	2.38	0.47	0.85	4.50
1855....	0.12	1.26	0.00	0.00	0.00	....	....	....	....	....	....	....	0.00	.....	.....	.....	.....
Mean...	0.03	0.39	0.20	0.07	0.00	0.00	0.18	1.13	0.58	0.10	0.18	0.38	0.27	1.31	0.86	0.80	3.24

## SAN DIEGO, CALIFORNIA.

1850....	0.00	1.13	1.00	0.09	0.00	0.68	0.00	0.00	0.00	0.19	2.82	1.93	1.09	0.68	3.01	3.06	7.84
1851....	0.03	1.51	0.34	0.87	0.71	0.01	0.00	0.00	0.02	0.01	0.25	3.74	1.92	0.01	0.28	5.28	7.49
1852....	0.58	1.84	1.87	0.85	0.32	0.00	0.00	0.40	0.00	0.06	1.45	4.50	3.04	0.40	1.51	6.92	11.87
1853....	0.50	0.20	1.52	0.25	2.10	0.05	0.00	0.21	0.00	0.00	1.28	1.77	3.87	0.26	1.28	2.47	7.88
1854....	1.46	2.56	2.14	0.75	0.21	0.02	0.07	1.35	0.13	0.01	0.02	3.34	3.10	1.44	0.16	7.36	12.06
1855....	2.40	4.83	1.53	1.82	0.10	....	....	....	....	....	....	....	3.42	.....	.....	.....	.....
Mean...	0.83	2.01	1.40	0.77	0.57	0.15	0.01	0.39	0.03	0.05	1.16	3.06	2.74	0.55	1.24	5.90	10.43

## SAN LUIS REY, RANCHO DEL CHINO, AND RANCHO DE JURUPA, CALIFORNIA.

S. 1850.	....	....	....	....	....	....	0.00	0.00	0.00	0.20	3.28	2.22	.....	0.00	3.48	.....	.....
S. 1851.	0.09	0.95	0.21	....	....	....	....	0.00	....	....	....	....	0.21	.....	.....	3.26	6.95
1855*....	....	....	1.58	3.78	0.61	0.00	....	....	....	....	....	....	5.97	.....	.....	.....	.....
1851....	....	....	....	....	....	....	0.00	0.00	0.00	0.00	....	....	.....	.....	.....	.....	.....
1852....	....	....	....	....	....	....	....	....	0.00	0.00	2.89	7.50	.....	.....	2.89	.....	.....
1853....	0.25	0.67	3.15	0.33	1.14	0.00	0.00	0.18	0.00	0.00	0.44	2.04	4.62	0.18	0.44	2.96	8.20
1854....	1.64	2.34	3.09	....	....	....	....	....	....	....	....	....	....	.....	.....	.....	.....
Mean...	0.95	1.50	3.12	0.33	1.14	0.00	0.00	0.09	0.00	0.00	1.67	4.97	4.59	0.09	1.67	7.42	13.77

\* At Fort Yuma; the summary embraces only the observations which follow, taken at two posts near each other, *Del Chino* and *Jurupa*.

## MONTEREY, CALIFORNIA.

1847....	..	....	....	....	0.03	0.00	0.00	0.00	0.00	1.10	3.10	0.00	....	.....	.....	.....	.....
1848....	1.70	2.20	2.40	0.65	2.50	0.50	0.50	0.00	....	....	....	....	.....	.....	.....	.....	.....
1849....	....	....	....	....	0.03	0.00	0.00	0.00	0.00	0.01	0.61	3.45	.....	0.00	0.62	.....	.....
1850....	2.95	2.00	1.30	0.33	0.00	0.00	0.00	0.00	0.02	0.00	0.61	2.98	1.66	0.00	0.63	7.93	10.22
1851....	....	....	....	....	....	....	0.01	0.00	0.01	0.20	0.91	4.50	.....	.....	1.12	.....	.....
1852....	0.40	0.30	6.12	0.92	0.10	0.16	0.00	0.00	....	....	....	....	7.14	0.16	.....	.....	.....
Mean...	1.68	1.50	3.27	0.63	0.53	0.13	0.08	0.00	0.01	0.33	1.31	2.73	4.43	0.21	1.65	5.91	12.20

## FORT MILLER, CALIFORNIA.

1851....	....	....	....	....	....	....	0.00	0.00	0.01	0.00	....	10.41	.....	.....	.....	.....	.....
1852....	0.42	0.61	15.59	2.59	0.60	0.00	0.00	0.00	0.07	0.07	8.80	20.60	18.78	0.00	8.91	21.63	49.35
1853....	1.20	2.35	5.54	2.25	4.79	0.00	0.01	0.00	0.00	0.00	1.26	1.00	12.58	0.01	1.26	4.55	18.40
1854....	2.26	2.42	0.85	2.08	0.04	0.01	....	....	0.12	0.68	0.00	1.25	2.97	.....	0.80	5.93	.....
1855....	1.48	1.37	3.64	0.34	0.00	....	....	....	....	....	....	....	3.98	.....	.....	.....	.....
Mean...	1.34	1.69	6.40	1.81	1.36	0.01	0.01	0.00	0.05	0.19	3.35	8.31	9.57	0.02	3.59	11.34	24.51



SAN FRANCISCO, CALIFORNIA.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1850....	....	....	8.38	....	0 00	0.01	....	..	....	....	....	....	.....	.....	.....	....	.....
1852....	....	....	....	....	....	....	0.00	0.00	0.00	0.69	4.92	12.07	.....	.....	5.61	.....	.....
1853....	3.75	1.17	3.72	5.27	0.42	0.00	0.00	0.00	0.23	0.28	2.00	1.86	9.41	0.00	2.51	6.78	18.70
1854....	3.04	5.87	3.11	2.24	0.06	1.05	0.01	0.03	0 03	1.56	0.40	0.60	5.41	0.09	1.99	9.51	17.00
1855....	2.89	2.88	3.23	3.65	1.42	0.00	....	....	....	....	....	....	8.30	.....	.....	.....	.....
Mean...	3.23	3.31	4.61	3.72	0.48	0.02	0.00	0.01	0.09	0.84	2.44	4.84	8.81	0.03	3.37	11.38	23.59

BENICIA BARRACKS, CALIFORNIA.

1849....	....	....	....	....	....	....	....	....	....	....	4.46	....	.....	.....	.....	.....	.....
1850....	4.44	1.68	2.45	....	....	0.00	0.00	0.00	0.01	0.00	1.03	2.18	.....	0.00	1.04	8.30	.....
1851....	0.88	0.23	5.83	1.37	0.59	0.00	0.00	0.00	0.04	0.10	1.34	4.92	7.79	0.00	1.48	6.03	15.30
1852....	0.36	0.00	4.78	0.03	0.00	0.03	0.00	0.00	0.01	1.05	2.28	9.03	4.81	0.03	3.34	9.39	17.57
1853....	2.48	0.44	2.66	3.12	0.36	0.00	0.00	0.00	0.00	0.04	1.71	0.99	6.14	0.00	1.75	3.91	11.80
1854....	2.06	4.80	2.05	1.56	0.00	0.01	0.00	0.00	0 00	2.26	0.87	1.45	6.27	0.01	3.13	6.50	15.91
1855....	2.86	2.79	3.13	3.25	2.01	0.00	....	....	....	....	....	....	8.39	.....	.....	.....	.....
Mean...	2.18	1.66	3.48	2.33	0.59	0.01	0.00	0.00	0.01	0.69	1.95	3.72	6 40	0.01	2.65	7.56	16.62

SACRAMENTO AND CAMP FAR WEST, CALIFORNIA.

1849....	....	....	....	....	....	....	0.00	0.00	0.00	0.20	6.41	5.20	.....	0.00	6.61	.....	.....
1850....	6.31	0.60	5.60	1.40	0.01	....	....	....	....	0.01	2.10	2.00	7.01	.....	.....	8.91	.....
1851....	2 06	1.16	3.44	3.06	0.86	0.00	0.00	0.00	0.36	0.10	1.86	6.63	7.36	0.00	2.32	9.85	19.53
1852....	1 60	0.13	10.05	....	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....
Mean..	3.32	0.63	6.36	2.23	0.43	0.00	0.00	0.00	0.18	0.10	3.46	4.61	9.02	0.00	3.74	8.56	21.32

FORT READING, CALIFORNIA.

1852....	....	....	....	2.87	....	1.06	0.00	0.00	0.00	0.48	8.48	11.18	.....	1.06	8.96	.....	.....
1853....	4.66	3.18	7.11	4.57	0.73	0.00	0 00	0.24	0.02	0.02	2.52	2.18	12.41	0.24	2.56	9.02	24.23
1854....	2 90	2.15	0.80	3.07	2.40	0.00	0.01	0.00	0.00	2.26	0.87	1.45	6.27	0.01	3.13	6.50	15.91
1855....	3.69	6.95	5.68	5.17	5.43	0.20	....	....	....	....	....	....	16.28	.....	.....	.....	.....
Mean...	3.75	4.09	4.53	3.92	2.85	0.31	0.00	0.08	0.01	0.92	3.96	4.60	11.30	0.39	4.89	12.44	29.02

FORTS HUMBOLDT AND JONES, CALIFORNIA.

1854....	4.83	6.80	5.14	5.58	0.12	0.69	0.00	0.00	0.00	3.69	0.98	1.18	10.84	0.69	4.67	12.81	29.01
1855....	3 30	4.45	6.80	....	2.80	1.60	....	....	....	....	....	....	.....	.....	.....	.....	.....
1853....	3.78	1.38	3.39	1.02	1.17	0.41	0.13	....	....	0.48	4.47	1.19	5.38	.....	.....	6.35	.....
1854....	0 54	2.62	0.75	1 99	0.21	0.63	0.20	0.21	0.00	4.18	0.48	1.13	2.95	1.04	4.66	4.29	13.09
1855....	1.58	3.83	5.24	1.50	0.87	....	....	...	....	....	....	....	7.61	.....	.....	.....	.....
Mean { Ft J. }	1.97	2.07	3.13	1.50	0.75	0.52	0 16	0.21	0.00	2.33	2.97	1.16	5.38	0.89	5.30	5.20	16.77

## FORT ORFORD, OREGON.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
1852....	....	....	....	....	....	0.33	0.31	1.00	....	....	12.03	16.91	.....	1.64	.....	.....	.....
1853....	11.81	6.65	6.45	6.11	1.89	....	....	....	....	...	....	....	14.45	.....	.....	.....	.....
1854....	....	....	....	....	....	....	0.00	2.56	0.19	11.10	4.59	6.37	.....	.....	15.88	.....	.....
1855....	7.81	6.04	9.84	5.17	8.60	1.80	....	....	....	....	....	....	23.61	.....	.....	.....	.....
Mean...	8.81	6.35	8.24	5.64	5.24	1.06	0.16	1.78	0.19	11.10	8.31	11.64	19.12	3.00	19.60	26.80	68.52

## FORT VANCOUVER, WASHINGTON TERRITORY.

1849....	....	....	....	....	....	....	....	....	....	....	....	6.00	.....	.....	.....	.....	.....
1850*...	6.66	2.60	6.71	0.60	0.40	3.22	8.35	0.00	0.98	2.69	4.90	1.29	7.71	11.57	8.57	10.55	38.40
1851....	9.55	2.04	4.08	....	....	....	...	....	....	....	....	7.93	.....	.....	.....	19.52	.....
1852....	9.31	4.77	4.26	6.56	3.49	1.77	....	....	....	1.55	7.37	13.37	14.31	.....	.....	27.45	.....
1853....	9.30	4.21	2.47	1.72	2.33	0.90	0.30	0.39	2.00	3.66	11.57	3.22	6.52	1.59	17.23	16.73	42.07
1854....	....	2.83	1.22	2.78	0.75	2.41	0.00	1.72	0.00	2.31	3.19	8.34	4.75	4.13	.....	11.17	.....
1855....	13.29	3.84	3.99	2.04	3.77	2.43	....	....	....	....	....	....	9.80	.....	.....	.....	.....
Mean...	9.62	3.38	3.79	2.74	2.75	2.68	2.85	0.70	0.99	2.55	6.76	6.69	9.28	6.23	10.30	19.69	45.50

\* At Columbia Barracks from September, 1850.

## DALLES OF COLUMBIA, OREGON.

1850....	....	....	....	....	....	....	0.01	0.00	0.09	0.91	1.14	0.19	.....	.....	2.14	.....	.....
1851....	3.81	1.70	1.79	....	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....
1852....	....	....	....	....	....	....	....	....	....	0.25	2.75	8.01	.....	.....	.....	.....	.....
1853....	3.02	1.09	0.27	1.29	0.62	0.00	0.08	0.61	1.41	0.24	4.90	0.95	2.18	0.69	6.55	5.06	14.48
1854....	2.79	0.73	0.36	1.52	0.00	0.15	0.00	0.18	0.84	1.91	1.41	2.50	1.88	0.33	4.16	5.02	11.39
1855....	3.03	0.63	1.87	0.17	1.08	0.24	....	....	...	....	....	....	3.12	.....	.....	.....	.....
Mean...	3.16	1.04	1.07	0.99	0.57	0.13	0.03	0.26	0.78	0.83	2.55	2.91	2.63	0.42	4.16	7.11	14.32

## FORT STELLACOOM, WASHINGTON TERRITORY.

1849...	....	....	....	....	....	....	....	....	....	....	9.42	8.15	.....	.....	.....	.....	.....
1850....	8.52	4.83	6.70	1.00	0.30	0.40	0.20	0.00	1.20	2.40	5.14	2.62	8.00	0.60	8.74	15.97	33.31
1851....	15.30	1.47	2.20	3.09	1.95	0.55	0.36	0.81	2.68	3.96	3.02	3.93	7.24	1.72	9.66	20.70	39.32
1852....	11.50	5.43	5.12	3.34	0.12	0.82	0.93	1.78	1.02	3.72	6.17	8.84	8.58	3.53	10.91	25.77	48.79
1853....	8.14	3.24	2.62	1.57	2.08	3.09	0.23	1.19	4.99	6.93	18.41	4.42	6.27	4.61	30.33	15.80	57.01
1854....	8.69	7.57	2.89	12.50	0.88	5.68	0.00	3.93	3.46	4.37	7.37	12.87	15.27	9.61	15.20	29.13	69.21
1855....	5.10	8.40	7.85	7.14	5.81	1.40	....	....	....	....	....	....	20.80	.....	.....	.....	.....
Mean...	9.54	5.16	4.56	4.77	1.86	1.97	0.34	1.54	2.67	4.28	8.25	6.81	11.19	3.85	15.20	21.51	51.75

## SUMMARY FOR 1843.

STATIONS.	WINDS.								WEATHER.			
	DAYS.								DAYS.			
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Fair	Cloudy	Rain.	Snow.
Hancock Barracks .....	55	36	28	32	68	41	39	53	172	233	98	42
Fort Sullivan .....	9	15	7	67	41	103	75	49	172	193	66	39
Fort Constitution .....	27	45	90	12	55	34	75	87	183	182	65	37
Watertown Arsenal .....	20	32	26	24	13	82	81	91	166	199	61	37
Fort Adams .....	43	49	31	27	26	56	44	67	200	165	91	33
Fort Trumbull .....	36	42	13	27	16	70	26	125	164	201	97	32
Fort Columbus .....	14	72	10	37	9	53	22	139	159	206	90	19
Fort Hamilton .....	31	47	32	23	29	45	39	54	173	192	76	23
West Point .....	24	9	2	20	32	17	19	120	185	180	83	30
Watervliet Arsenal .....	28	3	9	20	117	21	106	53	151	214	66	42
Plattsburg Barracks .....	21	36	2	48	14	74	6	152	220	145	85	49
Madison Barracks .....	7	40	10	66	59	112	16	69	130	225	79	54
Fort Ontario .....	22	44	18	42	33	70	69	39	138	227	90	57
Fort Niagara .....	21	62	26	21	26	80	53	68	119	246	90	34
Buffalo Barracks .....	28	41	12	15	12	147	54	35	151	214	115	67
Alleghany Arsenal .....	41	27	15	6	7	28	44	64	142	243	101	32
Carlisle Barracks .....	21	17	73	29	30	19	101	37	205	160	91	19
Fort Mifflin .....	11	66	12	31	11	97	40	89	217	148	107	17
Fort McHenry .....	33	54	16	33	15	62	61	73	190	175	101	19
Fort Severn .....	35	13	6	37	47	30	30	79	202	163	92	7
Fort Monroe .....	7	62	53	34	13	86	37	67	188	177	118	6
Fort Macon .....	40	67	11	29	32	91	25	58	259	106	109	1
Fort Johnston .....	28	47	33	17	36	49	24	11	265	100	....	....
Augusta Arsenal .....	38	38	8	30	50	105	12	75	241	124	91	2
Fort Moultrie .....	30	46	69	21	36	36	81	22	239	126	84	0
Oglethorpe Barracks .....	35	57	32	41	60	45	30	33	217	148	104	0
Fort Marion .....	23	108	14	57	13	32	23	47	240	125	92	0
Fort Brooke .....	31	71	41	48	32	45	22	27	255	110	125	0
Camp Barrancas .....	36	63	36	58	19	71	19	47	170	195	110	0
Mt. Vernon Arsenal .....	19	116	3	88	9	66	3	81	228	137	118	1
Fort Pike .....	23	77	47	71	24	25	32	40	198	167	115	0
Fort Wood .....	94	18	92	8	82	8	46	5	194	171	118	1
New Orleans .....	....	....	....	....	....	....	....	....	154	211	115	1
Baton Rouge .....	75	21	104	30	58	15	19	16	240	161	125	0
Fort Jesup .....	53	54	21	37	138	32	5	19	176	189	121	3
Fort Washita .....	17	69	6	80	7	99	9	58	222	143	76	4
Fort Towson .....	44	72	51	49	19	14	13	58	182	183	109	4
Fort Smith .....	3	48	36	37	9	43	14	42	199	166	101	9
Fort Gibson .....	20	70	53	143	23	20	8	21	239	126	68	6
Fort Scott .....	26	52	41	46	52	45	34	41	192	173	111	9
Jefferson Barracks .....	16	29	28	57	29	38	68	77	179	186	93	26
St. Louis Arsenal .....	35	38	54	47	29	39	71	42	203	162	57	20
Detroit Barracks .....	31	75	22	21	48	98	30	33	109	256	82	47
Fort Gratiot .....	12	74	13	49	30	94	25	39	143	222	105	61
Fort Mackinac .....	32	29	70	21	16	17	76	98	151	214	52	66
Fort Brady .....	39	17	72	48	29	24	59	64	138	227	91	43
Fort Winnebago .....	27	18	22	27	45	23	49	73	183	182	68	58
Fort Atkinson .....	36	41	24	20	33	38	31	109	173	182	68	63
Fort Crawford .....	10	16	11	58	24	80	16	149	181	184	70	48
Fort Snelling .....	21	23	11	47	52	84	22	73	167	198	68	37
Fort Leavenworth .....	36	29	20	31	83	37	31	70	206	159	71	21



## SUMMARY FOR 1844.

STATIONS.	WINDS.								WEATHER.			
	DAYS.								DAYS.			
	N.	N.E.	E.	E.	S.	S.W.	W.	N.W.	Fair.	Cloudy.	Rain.	Snow.
Hancock Barracks.....	62	24	32	26	62	46	65	46	141	225	78	35
Fort Sullivan.....	21	19	15	39	36	99	67	67	197	169	74	19
Fort Proble.....	50	30	7	31	71	107	30	39	174	192	68	19
Fort Constitution.....	32	47	19	14	75	35	66	80	179	185	67	26
Fort Adams.....	44	63	22	15	30	83	60	48	164	202	104	10
Fort Trumbull.....	51	39	14	32	29	69	55	78	181	185	119	17
Fort Columbus.....	26	75	25	45	10	57	45	82	199	167	108	13
Fort Hamilton.....	33	90	21	24	22	70	49	53	205	161	75	14
West Point.....	26	12	5	51	49	29	33	159	180	186	88	17
Watervliet Arsenal.....	38	2	1	9	137	31	87	57	193	172	65	23
Plattsburg Barracks.....	42	91	11	53	38	82	20	66	171	195	98	19
Madison Barracks.....	6	78	7	81	30	83	10	71	130	236	102	34
Fort Ontario.....	12	76	14	68	41	61	30	59	124	210	68	14
Fort Niagara.....	33	45	25	35	64	62	52	49	135	228	118	27
Buffalo Barracks.....	33	33	15	17	18	149	57	42	134	232	112	48
Allegany Arsenal.....	51	49	26	15	17	65	73	65	152	214	121	13
Cattaraugus Barracks.....	17	13	74	21	21	14	140	64	202	164	75	16
Fort Mifflin.....	11	73	12	42	15	94	29	89	218	148	98	11
Fort McHenry.....	53	41	29	35	36	38	85	51	214	152	79	9
Fort Severn.....	39	25	8	46	76	43	42	86	216	150	99	15
Fort Monroe.....	12	43	66	52	12	62	53	61	180	186	103	7
Fort Johnston.....	19	76	47	16	47	103	32	25	256	110	86	1
Angusta Arsenal.....	15	37	35	39	28	102	51	56	238	128	70	0
Fort Moultrie.....	29	51	60	21	46	57	64	34	231	132	88	0
Oglethorpe Barracks.....	64	31	69	17	69	26	70	18	214	152	97	0
Fort Marion.....	41	65	67	45	33	46	36	33	249	117	83	0
Key West.....	41	38	135	39	38	11	8	7	277	58	79	0
Fort Brooke.....	7	99	45	26	64	85	16	21	285	81	76	0
Camp Barrancas.....	51	39	41	49	17	79	44	41	174	192	114	0
Fort Pike.....	23	52	64	59	14	66	32	60	272	94	101	0
Fort Wood.....	84	2	96	1	99	6	75	3	219	147	90	0
New Orleans.....	30	26	67	39	33	28	24	18	203	163	86	0
Baton Rouge.....	39	58	122	40	24	30	35	17	213	153	71	0
Fort Jesup.....	24	64	10	50	138	48	6	25	232	144	76	0
Fort Towson.....	42	59	70	75	13	17	16	65	233	143	84	3
Fort Washita.....	33	23	21	29	163	35	31	29	229	137	66	6
Fort Smith.....	5	30	55	20	26	37	41	33	214	152	88	3
Fort Gibson.....	20	37	36	213	24	17	6	12	203	163	64	2
Fort Scott.....	47	35	32	26	76	72	47	29	202	161	109	7
Jefferson Barracks.....	28	37	21	60	54	54	56	51	212	151	90	11
St. Louis Arsenal.....	37	49	50	60	40	40	53	36	283	83	75	10
Detroit Barracks.....	51	43	22	18	62	70	60	38	142	224	107	23
Fort Gratiot.....	14	76	16	83	43	73	19	46	112	255	113	38
Fort Mackinac.....	52	33	28	54	25	46	69	61	141	225	66	48
Fort Brady.....	29	24	65	82	13	27	60	65	111	255	93	57
Fort Winnebago.....	32	14	14	26	30	29	42	38	160	174	80	33
Fort Crawford.....	14	33	11	67	25	60	15	138	182	184	113	18
Fort Atkinson.....	75	30	46	60	39	37	28	69	167	199	79	26
Fort Snelling.....	21	35	16	65	45	75	21	81	179	187	82	26
Fort Des Moines.....	53	22	46	21	52	42	73	47	186	180	91	15
Fort Leavenworth.....	30	45	17	62	55	50	21	79	191	175	76	9

\* January not observed.

† At Pass Christian from July to October.

‡ No observations in May.

## SUMMARY FOR 1846.

STATIONS.	WINDS.								WEATHER.			
	DAYS.								DAYS.			
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Fair.	Cloudy.	Rain.	Snow.
Fort Adams.....	54	53	19	28	20	75	66	49	149	216	98	15
Fort Trumbull . . . . .	64	33	9	15	32	75	48	89	167	178	101	22
Fort Hamilton.....	39	80	19	15	25	83	45	59	231	134	67	15
Fort Columbus.....	9	67	7	40	10	62	40	129	185	180	81	16
West Point.....	22	13	3	65	40	54	32	138	191	174	103	22
Watervliet Arsenal.....*	31	3	0	14	119	38	106	53	224	144	79	21
Plattsburg Barracks.....	66	16	28	3	123	18	91	20	153	242	83	32
Madison Barracks.....	3	63	4	75	10	119	9	81	107	258	101	34
Fort Ontario.....	29	45	16	42	39	78	49	65	134	231	78	28
Fort Niagara.....	23	31	14	33	78	67	65	54	109	256	73	17
Alleghany Arsenal.....	30	37	35	16	27	60	82	70	179	186	108	22
Carlisle Barracks.....	7	8	61	17	8	11	182	44	214	151	68	20
Fort Millin.....	31	42	25	19	44	75	67	61	184	184	86	17
Fort McHenry.....	33	54	22	59	13	65	56	64	165	200	84	10
Fort Moultrie.....	28	46	36	19	54	69	80	74	270	95	77	0
Augusta Arsenal.....	31	36	18	40	32	106	45	57	235	130	53	0
Oglethorpe Barracks.....	78	12	59	5	85	9	108	10	286	79	86	0
Fort Marion*.....	29	61	42	39	27	27	44	22	229	105	76	0
Key West.....	43	16	67	23	38	3	5	7	148	64	55	0
Fort Brooke.....	42	74	35	32	66	37	46	31	212	153	85	0
Mount Vernon Arsenal.....	3	72	7	80	7	50	5	131	219	146	88	0
Fort Towson.....	51	41	86	81	24	20	14	46	241	124	68	4
Fort Washita.....	19	14	33	25	162	31	72	8	212	153	75	8
Fort Smith.....	11	31	119	16	48	52	46	39	263	102	66	3
Fort Gibson.....	17	58	14	110	98	32	13	22	210	155	49	2
Fort Scott.....	49	33	36	33	76	60	34	43	231	134	80	12
Jefferson Barracks†.....	29	23	7	36	68	63	24	88	190	169	79	6
St. Louis Arsenal.....	51	39	43	16	47	45	55	38	280	85	64	7
Detroit Barracks.....	84	9	41	9	47	35	98	24	156	220	65	28
Fort Gratiot.....	15	63	14	101	51	53	13	50	111	254	85	30
Fort Mackinac.....	46	27	32	28	39	60	87	40	139	226	85	55
Fort Brady.....	22	19	64	66	29	35	78	58	120	245	71	54
Fort Wilkins.....	43	18	21	31	56	47	83	66	116	249	64	65
Fort Atkinson.....	65	24	16	34	38	51	47	52	201	164	64	24
Fort Snelling.....	13	19	31	86	29	46	68	70	207	158	77	22
Fort Des Moines.....	44	11	51	17	56	73	124	27	144	130	65	9
Fort Leavenworth.....	39	48	25	64	76	41	69	6	270	45	51	2

\* Month of August wanted.

† First seven months only.

‡ No observations taken for six days in September.

§ Observations for the first nine months only.

## SUMMARY FOR 1846.

STATIONS.	WINDS.								WEATHER.			
	DAYS.								DAYS.			
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Fair.	Cloudy.	Rain.	Snow.
Fort Adams (a) .....	27	50	12	12	19	61	38	24	112	161	75	15
Fort Hamilton.....	27	74	28	22	33	78	52	48	191	174	81	13
Fort Columbus.....	16	82	8	41	21	71	46	104	188	177	96	22
West Point.....	51	17	9	63	41	39	35	109	166	199	97	14
Plattsburg Barracks (b).....	28	22	11	14	29	8	41	16	66	115	34	13
Madison Barracks (c).....	2	44	3	28	2	58	7	31	52	129	43	30
Alleghany Arsenal.....	50	43	35	22	24	40	90	51	152	213	112	17
Fort Mifflin (d).....	8	13	8	5	11	24	17	25	55	65	23	13
Fort McHenry.....	22	86	14	63	16	55	44	63	158	207	79	22
Fort Monroe.....	23	38	64	47	27	59	53	54	201	164	106	5
Fort Moultrie (e).....	22	48	44	26	43	54	55	18	213	121	69	0
Augusta Arsenal (f).....	8	16	9	7	11	14	12	12	66	54	25	1
Oglethorpe Barracks (g).....	47	7	53	6	48	9	64	4	163	89	80	0
Fort Marion.....	17	5	15	31	19	15	19	16	78	103	41	0
Fort Brooke.....	25	92	84	27	39	41	39	16	205	160	116	0
Mount Vernon Arsenal.....	10	65	18	64	22	54	17	115	204	169	83	0
Baton Rouge.....	68	32	163	20	16	22	30	10	152	213	123	0
Corpus Christi (h).....	23	31	40	73	59	16	12	22	142	147	72	0
San Antonio (i).....	24	9	33	13	68	15	37	4	88	124	64	0
Fort Washita.....	36	27	70	42	102	29	42	15	263	102	81	3
Fort Smith.....	17	47	114	28	33	47	50	28	239	126	90	3
Fort Gibson.....	14	50	19	115	86	37	13	23	198	167	59	2
Fort Scott.....	40	49	29	38	49	69	38	53	160	205	87	3
Jefferson Barracks.....	12	53	80	21	42	22	53	8	204	151	76	9
St Louis Arsenal.....	43	47	46	47	51	43	52	31	303	62	84	9
Fort Gratiot (k).....	10	48	16	22	27	22	11	8	63	118	47	28
Fort Mackinac.....	39	57	50	39	22	45	52	60	148	217	59	44
Fort Brady (l).....	21	19	43	62	16	20	41	61	130	173	48	42
Fort Snelling.....	17	75	58	109	14	23	23	35	116	249	60	16
Fort Wilkins (m).....	16	12	13	25	23	18	37	27	83	98	26	44
Fort Leavenworth (n).....	34	30	40	64	56	47	14	74	220	141	61	6

(a) First nine months.

(b) First six months.

(c) First six months.

(d) First four months.

(e) October wanting.

(f) First four months.

(g) From January to September, inclusive, (except April.)

(h) From January to October, inclusive, (14 days wanting.)

(i) From January to June, inclusive, and December.

(k) First six months.

(l) July and August wanting.

(m) First six months.

(n) June incomplete.



## SUMMARY FOR 1847.

STATIONS.	WINDS.								WEATHER.			
	DAYS.								DAYS.			
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Fair.	Cloudy.	Rain.	Snow.
Fort Hamilton.....	32	66	27	16	31	82	25	85	209	156	79	17
Fort Columbus.....	16	62	7	44	16	85	5	128	195	170	105	19
West Point .....	29	47	9	59	32	45	47	120	179	186	78	14
Alleghany Arsenal.....	65	38	37	14	35	45	70	61	156	909	125	14
Fort McHenry.....	20	77	14	68	22	62	38	63	167	198	94	13
Fort Monroe.....	16	63	59	47	17	64	44	50	188	177	107	7
Fort Moultrie.....	58	48	35	36	66	35	61	24	273	92	77	0
Fort Brooke.....	22	54	70	59	56	38	41	25	196	169	77	0
Fort Barrancas (a) .....	21	11	26	15	25	17	16	13	107	44	36	0
Mount Vernon Arsenal .....	29	74	21	62	28	56	12	78	195	170	104	0
New Orleans Barracks.....	47	35	42	24	101	38	45	32	184	181	80	0
Fort Washita .....	109	25	38	19	127	11	23	12	263	102	72	5
Fort Smith .....	60	15	135	3	53	18	71	8	222	143	79	1
Fort Gibson.....	15	61	24	98	99	32	9	26	273	92	56	9
Fort Scott.....	67	36	36	34	84	38	38	31	180	185	66	19
St. Louis Arsenal....	55	46	43	50	44	39	47	41	238	127	71	4
Fort Mackinac.....	40	58	33	35	27	41	50	165	146	219	61	25
Fort Brady .....	32	33	81	36	19	37	69	58	211	154	84	33
Fort Snelling .....	30	67	43	105	75	127	154	25	109	256	53	19
Fort Leavenworth.....	12	25	7	41	100	66	20	93	260	105	37	16
Matamoras .....	74	27	200	14	39	3	3	4	265	100	47	1
Vera Cruz (b).....	75	10	22	25	9	3	19	4	121	93	73	0
Monterey (c).....	12	30	3	4	2	36	18	138	136	109	15	0

(a) First five months.

(b) Observations for the last seven months.

(c) Observations for the last eight months.

## SUMMARY FOR 1848.

STATIONS.	WINDS.								WEATHER.			
	DAYS.								DAYS.			
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Fair.	Cloudy.	Rain.	Snow.
Fort Hamilton.....	25	47	20	29	33	81	34	95	222	144	44	10
Fort Columbus.....	29	51	19	42	19	48	32	100	209	157	85	8
West Point.....	25	18	1	39	72	38	16	102	143	223	106	22
Albany Arsenal.....	15	25	38	24	15	42	62	61	162	204	90	13
Carlisle Barracks.....	22	22	53	30	29	23	123	43	218	148	71	1
Fort McHenry.....	29	40	12	56	24	67	30	72	168	198	68	4
Fort Monroe.....	23	65	54	42	16	59	59	53	212	154	65	3
Fort Mifflin.....	59	33	34	31	66	24	42	28	259	107	53	0
Fort Brooke (a).....	12	37	69	48	40	25	25	27	175	154	77	0
Mount Vernon Arsenal.....	12	48	29	48	67	31	29	67	177	189	98	0
New Orleans Barracks (b).....	45	26	57	35	67	12	39	16	161	199	92	0
Baton Rouge Barracks (c).....	22	50	11	33	4	24	6	41	117	97	82	0
Fort Washita.....	10	17	53	18	110	16	23	11	232	134	45	0
Fort Smith.....	25	14	115	5	35	14	63	6	227	139	58	3
Fort Gibson.....	19	25	8	23	53	115	24	68	203	123	51	2
Fort Scott.....	56	55	31	28	51	49	35	40	178	188	46	11
Jefferson Barracks.....	36	52	13	58	51	54	52	46	212	154	57	13
St. Louis Arsenal.....	33	47	34	42	36	45	81	44	245	121	78	12
Fort Mackinac (d).....	11	21	8	22	12	13	19	36	83	69	12	15
Fort Brady (e).....	10	13	33	13	7	17	29	21	77	75	21	30
Fort Snelling.....	5	33	10	99	23	67	19	104	139	227	59	33
Fort Leavenworth.....	31	19	14	30	51	57	50	91	....	....	....	....
Matamoros (f).....	21	14	20	27	47	7	6	4	67	85	38	0
Monterey (g).....	3	5	1	9	13	48	37	102	142	104	47	0

(a) October and six days of September wanting.

(b) Six days in December wanting.

(c) Last seven months.

(d) First five months.

(e) First five months.

(f) First five months.

(g) First eight months.

## SUMMARY FOR 1849.

STATIONS.	WINDS.								WEATHER.			
	DAYS.								DAYS.			
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Fair.	Cloudy.	Rain.	Snow.
Fort Sullivan (a).....	23	14	15	6	32	13	27	14	63	121	32	14
Fort Preble (b).....	45	6	7	14	17	15	52	33	105	99	35	11
Fort Constitution (a).....	32	6	18	8	43	8	22	22	73	111	50	9
Fort Adams.....	36	33	41	33	75	26	89	31	215	150	79	19
Fort Trumbull (a).....	9	40	7	21	6	43	17	35	128	117	78	6
Fort Hamilton.....	32	68	27	16	36	69	24	101	209	156	66	12
Fort Columbus.....	38	63	28	29	27	41	50	88	212	153	80	14
West Point.....	57	23	3	44	70	35	16	96	134	231	102	38
Plattsburg Barracks (a).....	18	10	14	29	43	18	26	18	90	94	32	6
Madison Barracks (c).....	39	27	20	19	66	47	41	24	148	158	74	17
Fort Niagara (a).....	24	12	24	10	31	17	35	16	93	91	54	12
Alleghany Arsenal.....	57	53	32	22	32	85	44	39	161	204	108	28
Carlisle Barracks.....	18	24	85	33	30	14	112	48	244	122	68	20
Fort Mifflin.....	41	38	42	25	46	46	88	39	174	191	87	12
Fort Mellenry.....	36	61	13	54	34	47	45	75	151	214	84	19
Fort Monroe.....	29	93	53	30	24	37	49	49	163	202	105	8
Fort Micon (d).....	50	34	15	15	43	43	10	22	132	103	53	6
Fort Moultrie.....	84	37	35	23	35	50	61	39	277	88	78	9
Fort Brooke.....	12	55	90	66	23	37	53	27	227	138	78	0
Barrancas Barracks (c).....	29	18	29	27	58	21	12	9	120	93	47	1
Mount Vernon Arsenal.....	18	46	6	84	17	74	4	114	172	193	90	1
Fort Pike (f).....	9	46	35	26	28	42	14	20	67	136	51	0
New Orleans Barracks (c).....	24	17	44	18	46	12	20	6	117	106	57	1
Baton Rouge Barracks.....	12	38	39	22	21	48	24	20	179	125	50	2
Fort Washita.....	31	64	65	70	44	39	30	20	163	202	106	5
Fort Smith.....	14	15	98	22	7	32	138	17	205	160	100	6
Fort Gibson.....	69	17	29	42	33	49	14	22	189	176	94	4
Fort Scott.....	58	49	34	35	87	49	30	31	146	219	87	5
Jefferson Barracks.....	37	32	74	54	62	30	34	41	170	195	93	8
Detroit Barracks.....	57	75	47	28	27	25	63	42	171	194	92	3
Fort Gratiot (a).....	29	27	7	11	32	29	20	17	96	88	43	11
Fort Mackinac.....	43	41	34	38	40	46	56	67	165	200	41	24
Fort Ripley.....	12	7	8	27	32	24	35	21	109	75	37	14
Fort Snelling.....	29	32	29	81	52	61	25	56	143	222	67	25
Fort Leavenworth.....	32	49	35	73	50	29	28	66	199	166	64	11
Fort Kearny.....	64	33	35	35	79	46	38	33	217	148	49	12
Fort Laramie (a).....	1	8	13	2	1	5	51	9	82	40	3	12
Fort Croghan.....	6	10	4	20	29	73	4	10	117	67	25	2
San Antonio.....	7	32	22	44	13	16	1	9	111	53	36	1
Fort Polk.....	4	11	5	97	21	13	1	30	128	46	35	1
Fort Brown (g).....	15	6	14	37	6	2	5	7	59	63	22	0
Fort McIntosh.....	4	11	1	112	4	0	0	35	113	71	54	0
Monterey.....	53	26	8	8	27	24	11	11	83	101	24	0

(a) Last six months.

(e) First seven months.

(b) Last seven months.

(f) First seven months, last nine days of January wanting.

(c) Last ten months.

(d) First eight months.

(g) Last four months.



## SUMMARY FOR 1850.

STATIONS.	WINDS.								WEATHER.			
	DAYS.								DAYS.			
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Fair.	Cloudy.	Rain.	Snow.
Fort Sullivan.....	41	37	13	29	44	58	51	76	147	218	69	46
Fort Preble.....	78	19	13	25	16	36	101	68	188	177	64	37
Fort Constitution.....	64	20	32	18	67	24	65	68	159	206	83	33
Fort Adams.....	28	35	26	30	28	65	86	60	191	174	88	9
Fort Trumbull.....	16	72	4	28	14	96	31	99	186	179	105	22
Fort Hamilton.....	37	35	30	23	37	50	20	121	212	153	80	21
Fort Columbus.....	28	46	23	25	36	42	56	89	200	165	92	19
West Point.....	84	9	2	21	90	28	15	96	158	207	108	40
Plattsburg Barracks.....	51	26	15	18	96	42	62	43	153	212	70	25
Madison Barracks.....	23	43	35	15	59	65	85	20	170	195	102	36
Fort Ontario.....	0	52	0	79	0	120	0	109	176	158	58	34
Fort Niagara.....	25	28	33	22	43	62	69	43	142	204	86	39
Alleghany Arsenal.....	38	34	16	13	23	65	40	21	161	204	114	27
Carlisle Barracks.....	13	18	71	28	23	24	122	52	191	174	89	20
Fort McHenry.....	34	66	22	23	26	39	32	50	212	153	94	10
Fort Monroe.....	27	55	62	29	21	49	66	47	206	159	109	5
Fort Moultrie.....	39	71	9	43	42	74	25	43	200	165	112	1
Mount Vernon Arsenal.....	29	61	18	70	31	35	14	82	197	168	97	0
Fort Towson.....	61	7	57	17	64	9	18	9	178	187	93	2
Fort Washita.....	26	40	55	38	58	73	38	22	201	164	92	6
Fort Gibson.....	66	46	22	20	33	43	24	69	213	152	58	7
Fort Scott.....	53	41	33	31	90	40	31	31	188	177	68	15
Jefferson Barracks.....	53	13	47	20	135	31	42	16	190	175	85	20
St. Louis Arsenal.....	64	21	37	23	69	27	57	29	208	157	74	16
Detroit Barracks.....	23	48	50	9	19	37	127	37	189	176	76	37
Fort Gratiot.....	45	47	55	31	46	38	55	31	198	167	80	40
Fort Mackinac.....	68	44	43	29	29	38	53	37	149	216	71	52
Fort Brady.....	16	11	60	75	22	31	46	61	161	204	83	60
Fort Howard.....	26	32	30	13	44	46	81	20	164	201	72	60
Fort Ripley.....	45	13	29	72	40	20	66	45	217	148	68	46
Fort Snelling.....	32	27	36	52	47	52	38	37	189	176	66	34
Fort Leavenworth.....	44	39	18	46	94	18	13	65	177	188	63	19
Fort Kearny.....	43	50	20	30	34	50	32	54	211	154	58	28
Fort Worth.....	31	24	16	31	100	29	27	18	247	118	52	8
Fort Gates.....	46	9	8	23	133	21	25	39	214	151	84	3
Fort Croghan.....	27	21	16	61	59	82	18	39	240	125	69	4
Fort Martin Scott.....	19	30	8	85	68	32	5	43	234	131	90	4
San Antonio.....	28	62	46	73	59	47	10	24	256	109	58	4
Fort Brown.....	18	39	12	223	8	15	7	41	247	118	49	1
Ringgold Barracks.....	25	23	40	154	26	7	6	24	228	137	59	0
Fort McIntosh.....	16	48	41	174	8	8	6	44	231	134	64	2
Fort Duncan.....	39	31	99	68	60	10	12	15	255	110	60	1
Socorro.....	64	24	39	39	72	36	27	36	290	75	55	13
Albuquerque.....	101	24	31	28	78	22	26	20	239	126	48	12
Cebalietta.....	21	11	16	27	17	18	51	67	263	102	46	35
Monterey.....	73	6	2	5	38	64	76	64	199	166	45	4
Fort Vancouver.....	26	21	66	21	32	22	152	25	219	146	98	0

## SUMMARY FOR 1851.

STATIONS.	WINDS.								WEATHER.			
	DAYS.								DAYS.			
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Fair.	Cloudy.	Rain.	Snow.
Fort Sullivan . . . . .	31	32	25	17	52	48	91	66	157	202	179	31
Fort Preble . . . . .	74	28	11	20	27	63	82	56	191	174	83	39
Fort Constitution . . . . .	57	23	31	16	54	33	79	71	180	185	85	31
Fort Adams . . . . .	51	29	28	20	61	50	68	56	176	189	98	12
Fort Trumbull . . . . .	6	70	5	29	8	116	21	111	169	196	118	21
Fort Hamilton . . . . .	44	29	22	20	33	71	37	107	197	168	88	16
Fort Columbus . . . . .	39	43	19	35	42	54	51	80	210	155	94	15
West Point . . . . .	74	17	2	25	94	35	17	104	149	218	105	29
Watervliet Arsenal . . . . .	39	2	2	8	96	107	117	50	181	184	88	32
Plattsburg Barracks . . . . .	20	24	8	18	108	68	55	45	158	217	83	22
Madison Barracks . . . . .	16	53	22	23	81	74	74	22	149	216	169	47
Fort Ontario . . . . .	0	69	0	68	0	111	0	92	183	182	75	31
Fort Niagara . . . . .	6	60	19	53	35	64	27	99	141	224	106	34
Alleghany Arsenal . . . . .	42	60	26	16	35	96	45	34	143	222	114	26
Fort Mifflin . . . . .	32	35	34	29	53	86	50	53	193	172	110	14
Fort McHenry . . . . .	46	55	14	25	18	63	59	75	198	167	82	11
Fort Monroe . . . . .	14	78	54	30	18	96	27	47	192	173	108	6
Fort Moultrie . . . . .	40	71	16	43	44	65	26	57	203	162	196	1
Key West . . . . .	56	55	121	62	37	12	10	12	212	153	86	0
Fort Myers . . . . .	45	89	46	56	27	44	26	32	248	117	112	0
Mt. Vernon Arsenal . . . . .	39	73	36	49	42	23	35	63	204	161	95	2
Baton Rouge Barracks . . . . .	71	65	69	43	45	19	26	25	205	160	95	0
Fort Washita . . . . .	46	32	60	29	57	53	61	16	222	143	66	4
Fort Scott . . . . .	35	43	20	33	82	77	25	41	187	178	71	12
Jefferson Barracks . . . . .	42	19	25	43	76	28	57	36	203	162	76	10
St. Louis Arsenal . . . . .	52	17	39	36	63	32	64	28	197	168	71	8
Newport Barracks . . . . .	99	18	14	10	97	37	40	30	190	175	70	8
Fort Gratiot . . . . .	41	40	32	24	63	64	64	33	172	193	81	46
Fort Mackinac . . . . .	68	14	105	11	31	17	95	18	161	204	100	69
Fort Brady . . . . .	12	12	84	40	27	82	85	24	129	236	77	64
Fort Howard . . . . .	57	21	24	7	81	48	59	116	140	225	83	41
Fort Snelling . . . . .	32	54	21	57	37	70	30	57	233	132	71	26
Fort Leavenworth . . . . .	81	47	6	14	110	53	7	32	169	196	79	21
Fort Laramie . . . . .	24	42	16	15	11	25	101	64	244	121	38	25
Fort Atkinson . . . . .	56	51	13	76	71	23	14	35	234	131	50	21
Fort Worth . . . . .	65	27	56	45	73	15	5	8	281	84	49	1
Fort Graham . . . . .	20	45	19	69	36	115	11	31	237	138	79	1
Fort Gates . . . . .	36	26	15	52	125	43	25	23	237	128	80	0
Fort Croghan . . . . .	28	31	12	91	92	44	17	36	248	117	69	1
Fort Martin Scott . . . . .	44	40	16	90	85	15	5	11	246	119	68	2
San Antonio . . . . .	39	53	68	95	57	14	14	11	249	116	59	1
Fort Brown . . . . .	30	40	73	106	65	19	26	15	175	190	42	0
Ringgold Barracks . . . . .	21	21	58	55	132	10	5	29	215	150	55	1
Fort McIntosh . . . . .	18	60	54	170	11	7	5	30	219	146	63	0
Fort Duncan . . . . .	50	28	90	99	65	8	5	6	275	190	47	0
Fort Lincoln . . . . .	25	44	18	171	37	15	4	26	219	146	59	0
Albuquerque . . . . .	15	20	5	9	14	18	19	11	166	46	18	6
San Diego . . . . .	7	38	35	34	44	109	58	20	223	142	37	0
Benicia . . . . .	5	4	22	16	31	138	96	13	294	71	51	0
Camp Far West . . . . .	12	5	1	63	56	24	12	41	303	62	61	0

## SUMMARY FOR 1852.

STATIONS.	WINDS.								WEATHER.			
	DAYS.								DAYS.			
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Fair.	Cloudy.	Rain.	Snow.
Fort Sullivan.....	13	48	18	11	20	70	46	109	162	204	89	28
Fort Preble.....	68	41	8	10	15	52	57	98	196	170	104	41
Fort Constitution.....	59	31	33	16	35	38	82	69	199	167	79	54
Fort Independence.....	24	58	6	38	14	81	19	54	190	176	73	32
Fort Adams.....	58	29	25	17	61	49	72	47	169	197	82	27
Fort Trumbull.....	2	89	2	32	2	102	16	106	184	182	99	24
Fort Hamilton.....	62	28	24	19	38	37	54	87	213	153	91	21
Fort Columbus.....	41	60	13	29	37	45	44	85	219	147	103	28
West Point.....	80	10	3	26	89	26	15	100	168	198	117	41
Watervhet Arsenal.....	22	19	1	6	119	10	122	41	218	148	70	37
Fort Niagara.....	11	22	39	41	17	73	62	62	170	196	93	46
Alleghany Arsenal.....	44	42	23	17	21	65	41	21	156	210	153	35
Carlisle Barracks.....	18	16	57	24	24	20	106	58	179	187	93	26
Fort Mifflin.....	17	46	25	32	25	51	32	59	188	178	102	22
Fort McHenry.....	49	53	11	18	24	36	71	58	199	167	108	19
Fort Washington.....	40	46	10	58	26	62	18	78	179	187	118	17
Fort Monroe.....	13	58	14	39	9	119	8	62	199	167	123	7
Fort Mifflin.....	44	58	22	33	36	73	45	45	220	146	84	9
Fort Pierce.....	34	36	75	32	57	21	74	16	216	150	78	0
Key West Barracks.....	52	64	70	57	40	25	11	19	239	127	82	0
Fort Myers.....	44	26	44	27	28	16	68	28	239	127	92	0
Fort Brooke.....	13	78	47	44	20	32	76	41	227	139	89	0
Fort Meade.....	60	22	67	33	41	19	85	26	255	111	97	0
Mount Vernon Arsenal.....	39	64	31	49	30	39	30	52	232	134	85	2
Baton Rouge Barracks.....	64	45	93	19	49	22	37	24	219	147	96	2
Fort Washuta.....	41	31	38	44	85	38	44	25	200	166	71	1
Fort Gibson.....	38	34	14	41	53	12	5	20	192	174	98	4
Fort Scott.....	45	49	25	28	67	52	35	30	190	176	89	11
Jederson Barracks.....	39	18	48	27	28	24	81	39	231	135	89	12
St. Louis Arsenal.....	48	14	45	11	50	28	67	28	228	138	83	8
Newport Barracks.....	27	68	21	9	50	28	67	28	205	161	102	12
Fort Ripley.....	63	34	22	32	79	39	47	31	168	198	85	56
Fort Snedling.....	28	58	16	50	25	79	31	66	264	102	44	28
Fort Dodge.....	31	35	32	27	10	60	29	106	163	203	81	47
Fort Leavenworth.....	23	58	2	54	37	61	7	81	188	178	81	22
Fort Kearny.....	89	60	22	72	44	7	11	28	191	175	60	33
Fort Larimer.....	52	83	24	13	1	10	18	109	191	175	74	61
Fort Atkinson.....	68	27	40	58	73	24	22	28	244	122	45	15
Fort Arbuckle.....	30	24	30	64	59	41	30	24	286	80	66	1
Fort Belknap.....	57	10	11	37	76	33	23	17	287	79	47	2
Phantom Hill.....	56	15	42	13	160	22	61	8	254	92	55	3
Fort Worth.....	46	43	21	85	46	23	20	43	209	157	64	3
Fort Graham.....	27	24	11	50	124	73	18	27	224	142	71	2
Fort Croghan.....	21	38	26	103	31	37	26	46	212	154	83	3
Fort Brown.....	18	43	64	110	69	30	13	16	263	103	41	0
Ringgold Barracks.....	36	23	39	127	80	4	2	16	244	122	55	0
Fort McIntosh.....	19	47	40	173	14	5	4	36	224	142	56	0
Fort Duncan.....	33	28	123	135	8	8	6	67	220	76	58	0
Fort Lige.....	21	67	120	35	4	1	6	17	232	134	62	0
Fort Fillmore.....	27	27	34	43	36	42	45	42	309	57	53	2
Fort Comal.....	60	20	9	5	62	23	80	11	226	70	42	7
Fort Union.....	40	14	15	23	21	23	34	99	265	101	62	19
San Diego.....	9	34	58	23	46	89	80	15	216	150	52	0
Bemera.....	1	2	32	5	16	53	220	2	230	136	59	0
Fort Steadman.....	8	29	27	91	14	78	41	85	119	247	146	25



## SUMMARY FOR 1853.

STATIONS.	WINDS.								WEATHER.			
	DAYS.								DAYS.			
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Fair.	Cloudy.	Rain.	Snow.
Fort Independence.....	32	64	13	31	5	62	45	52	197	157	81	21
Fort Hamilton.....	38	46	11	34	28	64	26	108	211	154	105	14
Fort Columbus.....	26	56	14	37	23	79	46	66	233	132	83	13
West Point.....	105	7	4	27	97	20	12	71	215	151	109	28
Watervliet Arsenal.....	28	8	1	17	86	31	112	47	234	131	92	26
Fort Niagara.....	31	35	37	14	56	38	96	41	200	165	75	33
Alleghany Arsenal.....	43	41	18	12	33	52	40	33	172	193	109	21
Fort McHenry.....	77	41	13	26	18	39	65	46	205	160	83	11
Fort Monroe.....	19	71	18	29	24	103	13	59	203	162	99	5
Fort Moultrie.....	59	75	26	46	34	70	29	28	243	122	80	1
Fort Pierce.....	59	46	34	59	83	8	43	23	267	98	68	0
Key West Barracks.....	96	52	89	45	31	12	9	17	253	112	93	0
Fort Myers.....	43	46	60	28	26	23	49	29	258	107	111	0
Fort Brooke.....	12	76	70	45	35	32	26	43	241	124	87	0
Fort Meade.....	54	56	83	38	32	23	46	16	213	152	119	0
Mount Vernon Arsenal.....	52	76	28	61	33	18	18	59	256	109	86	2
Fort Towson.....	79	48	114	25	52	2	8	7	192	173	87	4
Fort Washita.....	54	16	62	41	124	25	29	11	166	199	68	9
Fort Smith.....	19	32	81	25	28	22	39	23	220	145	64	3
Fort Gibson.....	62	15	12	48	91	6	4	14	204	161	79	8
Jefferson Barracks.....	20	17	42	21	127	27	80	16	237	128	55	0
St. Louis Arsenal.....	55	23	39	11	46	40	50	22	229	136	51	8
Newport Barracks.....	35	38	21	39	91	70	20	39	200	165	81	9
Fort Mackinac.....	34	23	21	44	43	27	75	78	172	193	67	32
Fort Brady.....	29	16	53	19	46	41	49	17	195	170	74	71
Fort Ripley.....	37	51	9	44	68	48	37	41	217	148	58	32
Fort Snelling.....	26	41	15	63	43	63	26	49	250	115	59	29
Fort Leavenworth.....	5	33	7	45	17	101	26	101	210	155	60	11
Fort Kearny.....	32	15	28	28	77	24	25	46	230	135	55	18
Fort Laramie.....	48	38	26	8	2	0	29	63	217	148	57	24
Fort Arbuckle.....	66	24	19	49	106	44	8	16	298	67	68	4
Fort Belknap.....	53	21	11	58	73	20	13	15	261	104	52	4
Phantom Hill.....	39	25	33	33	142	41	36	11	266	99	44	6
Fort Chadbourne.....	75	24	7	20	127	15	13	18	246	119	62	5
Fort Terrett.....	3	31	62	190	1	9	36	17	262	103	55	7
Fort Brown.....	13	37	68	87	39	56	22	31	230	135	49	0
Ringgold Barracks.....	41	28	28	110	114	2	5	19	183	182	85	0
Fort McIntosh.....	12	54	16	209	3	5	3	42	238	127	68	0
Fort Inge.....	18	67	157	58	1	2	4	24	251	114	59	1
Fort Duncan.....	32	18	155	84	9	9	4	33	274	91	54	1
Fort Clarke.....	43	9	30	165	55	4	13	21	173	192	52	2
Fort Fillmore.....	10	24	17	35	35	64	16	24	332	33	41	2
Fort Conrad.....	48	60	22	12	37	49	81	28	309	56	41	6
Albuquerque.....	18	18	60	19	65	4	85	7	307	58	26	4
Santa Fe.....	44	46	26	17	19	21	51	45	307	58	53	14
Fort Union.....	91	51	13	20	18	37	36	68	291	74	55	18
Fort Yuma.....	69	29	11	31	45	32	51	79	297	68	19	0
San Diego.....	3	31	69	36	47	90	70	12	266	99	32	0
Fort Jurupa.....	6	58	15	15	1	197	19	47	308	57	25	0
Fort Miller.....	9	17	97	61	24	22	64	19	317	48	32	0
San Francisco.....	19	22	9	17	18	78	110	76	184	176	64	0
Benicia.....	6	12	28	9	13	22	236	1	228	137	49	0
Fort Reading.....	46	3	4	5	49	7	4	10	276	89	63	0
Columbia Barracks.....	32	10	82	43	12	8	60	60	124	241	110	3
Dalles of Columbia.....	8	15	30	12	22	140	104	25	237	128	59	11
Fort Steilacoom.....	16	6	19	47	76	96	47	36	162	203	131	3

## SUMMARY FOR 1854.

STATIONS.	WINDS.								WEATHER.			
	DAYS.								DAYS.			
	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Fair.	Cloudy.	Rain.	Snow.
Fort Independence.....	45	39	19	29	14	66	50	83	166	199	92	31
Fort Hamilton.....	6	66	0	28	0	82	0	160	207	158	94	32
Fort Columbus.....	16	67	10	28	35	86	38	81	196	169	74	23
West Point.....	18	7	2	25	114	18	17	56	200	165	95	35
Watervliet Arsenal.....	34	1	4	20	91	28	36	45	237	128	70	23
Alleghany Arsenal.....	50	41	17	20	41	61	37	27	186	179	107	31
Fort McHenry.....	57	49	13	17	15	44	78	62	206	159	85	17
Fort Monroe.....	13	54	77	6	14	133	18	24	251	114	81	9
Fort Moultrie.....	30	61	36	23	46	63	51	44	230	135	99	0
Fort Pierce.....	22	73	42	79	16	45	27	38	159	206	121	0
Key West Barracks.....	43	95	64	65	28	28	7	15	230	135	103	0
Fort Myers.....	75	52	23	18	20	28	11	17	268	97	89	0
Fort Brooke.....	9	65	66	50	25	46	68	32	261	104	112	0
Fort Barrancas.....	84	36	15	31	25	34	41	77	175	190	90	0
Mt. Vernon Arsenal.....	27	63	20	80	27	35	18	69	224	141	104	0
Fort Washita.....	30	24	37	51	101	39	19	26	214	151	84	3
Fort Smith.....	25	25	73	37	54	35	16	14	207	158	91	5
Fort Gibson.....	54	11	21	48	115	13	4	13	207	158	85	3
Jefferson Barracks.....	20	9	34	37	78	19	56	20	217	148	64	8
St. Louis Arsenal.....	58	16	37	13	49	40	59	23	228	137	59	6
Newport Barracks.....	32	10	47	3	43	20	82	6	222	143	61	10
Fort Mackinac.....	34	23	60	37	40	16	59	73	159	206	78	44
Fort Brady.....	34	14	67	16	64	34	52	8	183	182	75	67
Fort Snelling.....	41	22	13	43	72	41	35	45	201	164	72	32
Fort Ripley.....	36	50	11	72	47	38	37	44	199	166	71	32
Fort Ridgely.....	37	24	23	56	49	40	35	89	184	181	77	30
Fort Leavenworth.....	29	27	31	44	36	82	27	63	236	129	63	11
Fort Riley.....	17	12	17	23	105	82	38	19	287	78	32	6
Fort Kearny.....	63	25	22	22	44	41	57	57	241	124	58	15
Fort Laramie.....	28	5	93	3	17	10	123	12	284	81	60	31
Fort Arbuckle.....	65	19	20	31	68	35	34	25	284	81	59	1
Fort Belknap.....	42	31	7	151	48	34	6	24	196	169	57	0
Fort Chadbourne.....	24	19	29	47	15	18	6	16	243	122	61	0
Fort McKavett.....	28	51	28	97	63	49	14	17	239	126	54	0
Fort Brown.....	26	26	44	94	58	61	17	26	210	155	71	0
Ringgold Barracks.....	48	17	48	123	80	10	9	16	223	142	53	0
Fort McIntosh.....	27	18	26	175	32	3	4	28	238	127	53	0
Fort Inge.....	45	55	138	52	3	0	1	5	226	139	54	0
Fort Duncan.....	12	11	4	223	0	0	1	59	212	153	56	0
Fort Clarke.....	23	31	74	149	18	6	7	39	221	144	42	1
Fort Fillmore.....	10	14	17	28	23	78	50	16	357	8	41	0
Fort Thorne.....	39	34	30	24	38	45	79	57	355	8	37	1
Fort Conrad (Craig).....	66	31	25	29	62	27	68	42	319	46	51	2
Albuquerque.....	88	37	17	29	94	19	23	21	307	58	55	5
Santa Fe.....	20	56	32	47	21	49	36	50	303	62	67	16
Fort Union.....	66	22	12	19	38	35	40	62	274	91	52	13
Fort Defiance.....	51	17	2	14	93	49	47	45	312	53	66	25
Fort Yuma.....	71	35	21	50	53	27	47	52	291	74	15	0
Fort Miller.....	3	17	64	41	50	44	44	15	246	88	45	0
San Francisco.....	21	29	4	15	21	109	130	33	181	184	72	0
Benicia Barracks.....	5	17	36	14	10	31	223	0	252	113	44	0
Fort Reading.....	83	17	3	14	54	24	12	28	266	99	55	2
Fort Humboldt.....	29	1	10	18	2	9	1	42	243	122	68	2
Fort Vancouver.....	2	7	2	33	15	43	15	19	158	176	75	2
Fort Steilacoom.....	25	2	23	14	99	57	54	18	180	185	123	11

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STATISTICS  
OF  
THE WAR WITH MEXICO.

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## STATISTICS OF THE WAR WITH MEXICO.

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THE regulations for the Medical Department of the army require all medical officers, when serving with troops in the field, to render monthly, to the medical director at the seat of war, and quarterly to the Surgeon General, "reports of sick and wounded, and of deaths, and of certificates for discharge for disability." The medical director is also required to make to the Surgeon General, monthly, a consolidated report of sick and wounded, from the several reports made to him.

The records of the Surgeon General's office attest that these regulations have been faithfully obeyed, and that the required reports have been made with remarkable regularity and accuracy. Notwithstanding the general completeness of the returns, a very extended and careful examination of the records has proved it to be impossible to compile from them correct abstracts of the sickness and mortality in the army during the war with Mexico. The sources of error are numerous, and cannot be eliminated. In some instances, important returns failed to reach the Medical Bureau, having been captured by the enemy; the same cases of disease were frequently reported more than once—first, perhaps, on the returns of surgeons of regiments, and again from one or more general hospitals to which the soldier had been sent or transferred. The consolidated monthly reports of the medical directors served to remove, in part, this source of error, but it unfortunately appears that those officers failed in many instances to receive the required reports from hospital and regimental surgeons, and, consequently, their returns are incomplete. Other sources of error might be mentioned, but enough has been stated to show the nature of the difficulties opposing the desired compilation.

Abandoning the effort to collate the vital statistics of the war exclusively from the records of the Medical Bureau, recourse was had to the muster-rolls of the army on file in the Adjutant General's office; from which source, chiefly, though aided somewhat by the medical returns, the following tables, (abstracts Nos. 1 and 2), exhibiting the statistics of commissioned officers and enlisted men by regiments, have been compiled.

The attempt to include the old army in these tables was reluctantly abandoned. The difficulties to be encountered were much greater than with the ten new regiments and volunteer corps, in which the original roll of muster into service, and final muster-roll for discharge, gave two fixed points; another almost insurmountable difficulty in regard to the old army consisted in the necessity of accounting for the numerous detachments of recruits which were from time to time forwarded to the seat of war.

It may, however, be briefly stated, that, exclusive of "discharges by expiration of service," the total loss in the old army, by deaths, discharges, resignations, and desertions, was 7,993, in an aggregate force of 15,736; being 50.79 per cent. for the whole service of 26 months, or a monthly loss of 1.95 per cent.

In the ten new regiments, using the same basis, the total loss was 3,839, in an aggregate strength of 11,186; being 34.22 per cent. for the whole service of 15 months, or a monthly loss of 2.28 per cent.

In the regiments and corps of volunteers, the total loss was 20,385, in an aggregate force of 73,260; being 27.82 per cent. for the average period of service, (10 months,) or a monthly loss of 2.78 per cent.

While it is thus shown that the total loss, from all causes, sustained during the war, was much greater in the old army than in either the ten new regiments, or volunteer troops, the relative loss for each month in which those forces were respectively in service is greatest in the regiments and corps of volunteers.

Confining the comparison to the "killed in battle" and "died of wounds," it is found that the old army sustained a loss of 792, or 5.03 per cent. of the aggregate force employed; the ten new regiments, a loss of 143, or 1.27 per cent. of their number; and the regiments of volunteers lost 613 of their aggregate strength, or 0.83 per cent.

Of the aggregate discharged "by order and civil authority," the larger proportion, by far, were by "order;" that is, by the order of the commanding general or other military authority; and it is well known that these orders were given to men with enfeebled or broken-down constitutions, who, under ordinary circumstances, could only have been discharged on "surgeon's certificate for disability." It is therefore deemed just, to consider all the discharges "by order" and "for disability" as consequent upon disease or wounds. If, then, we take the aggregate of the discharges under those two heads, together with the "ordinary" and "accidental" deaths, we will have the most correct expression of the total loss sustained by disease and the exposures and hardships of an active campaign, independent of losses in conflicts with the enemy.

Assuming that basis, it is ascertained that the old army, in a period of 26 months, and with an aggregate force of 15,736, lost 4,917 officers and men; being 31.24 per cent. for the whole service, or 1.20 per cent. per month.

The ten new regiments, in a service of 15 months, and with an aggregate strength of 11,186, lost 3,002 officers and men; being 26.83 per cent. for the whole service, or 1.79 per cent. per month.

The volunteer force, in an average service of 10 months, and with an aggregate strength of 73,260, lost 15,617 officers and men; being for the whole service 21.31 per cent., or 2.13 per cent. per month.

These deductions are made in no spirit of invidious comparison. The old army was longer in the field, and participated in more battles, than other portions of the military establishment, so that its total loss in killed and wounded is relatively greater than that of other corps. On the other hand, the statistical tables which follow, show that the loss sustained by the "additional force" and volunteers in some of the battles in which they were engaged, was greater than that of the old army.

The point to which particular attention is invited, is the disparity in the loss by disease in the several forces; the monthly ratio, the true comparison in this instance, being in the volunteer corps nearly twice as high as in the old army.

The examinations necessary to the compilation of this series of statistics were nearly completed, when a copy of a report of the Adjutant General to the Secretary of War, dated December 3d, 1849, prepared in answer to a resolution of the House of Representatives of July 31, 1848, calling for "information relative to the military forces employed in the late war with Mexico," was shown to the compiler. No extra numbers of this valuable report were printed, and it is now exceedingly difficult to obtain a copy. In view of the general interest which attaches to this subject in the army, a portion of the very extended series of tabular statements embraced in that report are herewith submitted.



No. 1.—Abstract exhibiting, by regiments, the statistics of commissioned officers serving in the army of the United States during the war with Mexico.

REGIMENTS.	Aggregate received into service during the war.	Aggregate mustered out of service.	Total loss from discharges, deaths, resignations, and desertions, &c., &c.	Term of service—months.	Total loss per cent.	Loss per cent. per month.	Loss by disease.	Total loss per cent. by disease.	Loss per cent. per month by disease.
3d dragoons .....	52	42	10	15	19.23	1.28	2	3.84	.25
9th infantry .....	59	38	21	14 $\frac{2}{3}$	35.66	2.43	1	.59	.40
10th do .....	53	48	5	15	9.43	.60	3	5.67	.37
11th do .....	52	43	9	15	17.32	1.15	5	9.61	.64
12th do .....	48	42	6	12	12.50	1.04	1	.48	.04
13th do .....	58	45	13	12	22.41	1.86	2	3.44	.28
14th do .....	50	37	13	13 $\frac{1}{2}$	26.00	1.92	5	10.00	.07
15th do .....	55	36	19	14 $\frac{1}{3}$	34.55	2.41	5	9.69	.06
16th do .....	47	38	9	14 $\frac{1}{2}$	5.22	.35	1	.47	.03
Voltigeurs .....	51	44	7	16	13.72	.85	None.		
1st Massachusetts foot .....	52	47	5	17	9.61	.56	1	.52	.03
1st regiment Pennsylvania foot .....	63	47	16	19 $\frac{1}{2}$	25.40	1.30	3	4.76	.24
2d do do .....	68	53	15	17 $\frac{1}{2}$	22.06	1.24	5	6.41	.36
2d New York foot .....	66	45	21	17 $\frac{3}{4}$	31.82	1.81	6	9.09	.51
1st battalion New Jersey foot .....	24	17	7	13	29.17	2.23	None.		
1st battalion Md. and D. C. foot .....	28	23	5	12	17.85	1.48	None.		
2d do do .....	46	41	5	13	10.86	.83	None.		
1st independent company mounted .....	7	4	3	9	42.82	4.75	2	28.57	3.17
1st regiment Virginia volunteers, foot .....	81	65	16	19	19.75	1.03	4	4.93	.25
1st North Carolina foot .....	62	44	18	18	29.03	1.61	2	.32	.17
1st South Carolina foot .....	64	45	19	18 $\frac{1}{2}$	29.68	1.56	9	14.04	.73
1st Alabama foot .....	55	46	9	11 $\frac{1}{3}$	16.36	1.42	3	.54	.47
1st battalion Alabama foot .....	30	26	4	6 $\frac{2}{3}$	13.33	2.00	2	.66	.11
2d do do .....	16	15	1	3					
3d do do .....	9	9	1	3	.25	.83	None.		
1st regiment Georgia foot .....	43	37	6	11 $\frac{1}{2}$	11.50	1.21	2	.46	.40
1st battalion Georgia horse .....	34	28	6	11	17.66	1.60	4	11.76	1.06
1st independent comp. Georgia horse .....	5	4	1	13 $\frac{1}{2}$	20.00	.14	None.		
1st battalion Georgia foot .....	26	21	5	13	19.23	1.47	4	15.38	1.18
1st Mississippi foot .....	55	47	8	12	14.81	1.23	6	10.97	.91
2d do do .....	69	47	22	18	31.88	1.77	4	1.47	.08
1st battalion Mississippi foot .....	26	24	2	3	7.61	.95	2	7.61	.95
1st Louisiana volunteers, foot .....	37	36	1	3	.37	.12	None.		
2d do do .....	43	35	4	3	9.30	3.10	None.		
3d do do .....	38	37	1	3	.38	.12	None.		
4th do do .....	43	41	2	3	4.65	1.55	None.		
5th do do .....	41	39	2	3	4.78	1.62	None.		
6th do do .....	42	38	4	3	9.52	3.17	None.		
Blanchard's company foot .....	5	4	1	9 $\frac{1}{2}$	20.00	2.10	None.		
Gally's artillery .....	11	11		3			None.		
Biscoe's battalion mounted .....	21	19	2	12	10.50	.87	None.		
De Russey's regiment foot .....	47	39	8	18 $\frac{1}{2}$	17.40	9.40	20	3.50	.19
Fiesca's battalion foot .....	34	26	8	13	23.52	1.80	5	1.47	.11
1st Arkansas horse .....	55	43	12	11 $\frac{1}{2}$	21.82	1.89	3	5.45	.47
1st independent company horse .....	4	4		10 $\frac{1}{2}$			None.		
2 companies Florida foot .....	8	8		11 & 11 $\frac{3}{4}$			None.		
Johnson's Texas foot rifles .....	40	38	2	21 $\frac{1}{2}$	5.00	2.22	None.		
Hay's cavalry, Texas .....	33	25	8	11 $\frac{1}{2}$	24.24	2.16	2	6.06	.54
Chevallie's battery, Texas .....	26	20	6	15 $\frac{1}{2}$	23.67	1.46	None.		
Hay's mounted rifles, Texas .....	39	35	4	8 $\frac{1}{4}$	10.25	1.26	None.		
Young's rangers, Texas .....	40	35	5	22 $\frac{3}{4}$	12.50	4.69	2	5.00	1.87
Wood's rangers, Texas .....	36	34	2	3 $\frac{1}{10}$	5.55	1.42	None.		
McCullough's company, Texas .....	4	4		12			None.		
Gray's company, Texas .....	3	3		12			None.		
Black Beaver's comp. (Indians,) Texas .....	2	2		2			None.		
Leefield's company, Texas .....	7	4	3	10 $\frac{1}{2}$	42.86	4.08	None.		
Lamar's company, Texas .....	4	4		12			None.		
McCullough's company, Texas .....	9	9		9			None.		
1st Kentucky horse .....	47	42	5	12 $\frac{1}{2}$	10.63	.84	1	.47	.02
1st Kentucky foot .....	52	42	10	12	19.23	1.60	1	.52	.04
2d do do .....	56	44	12	12 $\frac{1}{2}$	21.43	1.71	1	.56	.04
3d do do .....	58	47	11	8 $\frac{1}{2}$	18.96	2.23	2	1.16	.13

## ABSTRACT—Continued.

REGIMENTS.	Aggregate received into service during the war.	Aggregate mustered out of service.	Total loss from discharges, deaths, resignations, and desertions, &c., &c.	Term of service—mo's.	Total loss per cent.	Loss per cent. per month.	Loss by disease.	Total loss per cent. by disease.	Loss per cent. per month by disease.
4th Kentucky foot.....	54	48	6	8½	11.30	1.30	2	1.08	.09
1st independent company foot.....	4	4		11½					
1st Tennessee cavalry.....	46	38	8	11½	17.39	1.49	1	.46	.03
1st Tennessee foot.....	55	33	22	12	40.00	3.33	3	54.55	.45
2d.....do.....	39	25	14	12	35.90	2.99	3	7.69	.64
3d.....do.....	54	44	10	9½	18.51	1.89	2	3.70	.30
4th.....do.....	49	41	8	10	16.32	1.63	2	4.08	.40
5th.....do.....	54	51	3	8½	5.55	.65			
1st independent company mounted.....	4	4	0	14					
1st Ohio foot.....	63	47	16	12½	25.90	2.07	1	.63	.05
2d.....do.....	51	41	10	12	19.60	1.63	2	3.92	.32
3d.....do.....	52	47	5	12	9.61	.80	1	.52	.04
4th.....do.....	58	48	10	13½	17.24	1.27	2	.34	.02
5th.....do.....	57	52	5	11	8.77	.79	2	.36	.03
1st independent company foot.....	4	4	None.	9					
1st independent company horse.....	4	4	None.	14					
1st Indiana foot.....	56	48	8	12	12.48	1.19	3	.57	.04
2d.....do.....	54	46	8	12	14.74	1.22	None.		
3d.....do.....	55	45	10	12	18.18	1.51	6	10.99	.91
4th.....do.....	55	44	11	14	20.00	1.81	1	.55	.05
5th.....do.....	49	46	3	9½	6.12	.64	3	6.12	.64
1st Illinois foot.....	56	47	9	12	16.24	1.35	None.		
2d.....do.....	66	43	23	12	34.81	2.90	2	3.33	.27
3d.....do.....	52	36	16	12	30.80	2.56	3	5.77	.48
4th.....do.....	44	32	12	10½	27.27	2.59	5	11.25	1.16
6th.....do.....	68	44	24	12	35.29	2.94	14	20.58	1.71
2 companies, mounted.....	10	8	2	10½	20.00	1.90	1	.10	.09
1 company Michigan foot.....	4	4	None.	12			None.		
1 regiment.....do.....	44	39	5	8	11.25	1.40	4	9.09	1.13

## No. 2.

*Abstract exhibiting, by regiments, the statistics of enlisted men serving in the army of the United States during the war with Mexico.*

REGIMENTS.	Aggregate received into service during the war.	Aggregate mustered out of service.	Total loss from discharges, deaths, resignations, and desertions, &c., &c.	Term of service—mo's.	Total loss per cent.	Loss per cent. per month.	Loss by disease.	Total loss per cent. by disease.	Loss per cent. per month by disease.
3d dragoons.....	1179	765	414	15	35.15	2.34	266	22.56	1.50
9th infantry.....	1043	559	484	14½	46.42	3.16	332	31.83	2.17
10th.....do.....	1201	905	296	15	24.90	1.66	169	14.06	.93
11th.....do.....	1364	734	630	15	46.18	3.07	514	37.31	2.48
12th.....do.....	1181	663	518	12	43.87	3.65	450	38.14	3.17
13th.....do.....	1023	640	383	12	37.43	3.11	322	31.48	2.62
14th.....do.....	1066	581	485	13½	45.51	3.37	403	30.76	2.26
15th.....do.....	1341	702	639	14½	47.65	3.32	523	39.00	2.72
16th.....do.....	1323	974	349	14½	26.40	1.82	269	20.33	1.40
Voltigeurs.....	1365	701	664	16	48.66	3.04	519	38.02	2.37
1st Massachusetts foot.....	981	501	480	17	48.92	2.87	176	17.90	1.05
2d New York foot.....	1063	589	474	17½	44.60	2.55	276	25.96	1.48
1st Pennsylvania foot.....	1021	535	486	19½	47.61	2.34	364	35.66	1.82
1d.....do.....do.....	1151	585	566	17½	49.18	2.76	402	34.92	1.96
2 battalion New Jersey foot.....	418	267	151	13	36.91	2.84	62	14.97	1.15
1st batt. Maryland & Dist. Col. foot.....	537	330	207	12	38.55	3.21	129	24.02	2.00
2d.....do.....do.....do.....	732	493	239	13	32.03	2.46	153	20.90	1.60

## ABSTRACT—Continued.

REGIMENTS.	Aggregate received into service during the war.	Aggregate mustered out of service.	Total loss from discharges, deaths, resignations, and desertions, &c., &c.	Term of service—mo's.	Total loss per cent.	Loss per cent. per month.	Loss by disease.	Total loss per cent. by disease.	Loss per cent. per month by disease.
1st independent co., Md. & D C., m'd	107	64	43	9	40.19	4.46	18	16.80	1.86
1st regiment Virginia volunteers....	1,228	851	377	19	30.70	1.61	274	22.31	1.17
1st North Carolina foot.....	891	581	310	18	34.92	1.72	273	30.64	1.70
1st South Carolina foot.....	1,034	365	669	18½	64.72	3.49	509	49.23	2.66
1 regiment Alabama foot.....	910	613	297	11½	32.64	2.83	273	30.00	2.60
1 battalion.....do.....	569	465	104	6¾	18.27	2.74	88	15.47	2.32
1.....do.....do.....	293	258	35	3½					
1.....do.....do.....	284	253	31	3½	11.43	3.81	47	18.29	2.76
1 regiment Georgia foot.....	911	535	376	11½	41.24	3.58	329	36.08	3.13
1 battalion.....do.....horse	567	334	233	11	41.06	3.73	197	35.21	3.20
1 independent co., Georgia horse....	104	37	67	13½	46.43	4.77	63	60.60	4.49
1 battalion Georgia foot.....	475	186	289	13	60.86	4.68	232	49.34	3.79
2 companies Florida foot.....	191	100	91	11, 11½	47.66	4.21	76	39.79	3.52
1st Mississippi foot.....	942	428	514	12	54.38	4.54	421	44.70	3.72
2d.....do.....	1,018	571	447	18	43.91	2.43	377	37.03	2.05
1 battalion Mississippi foot.....	443	343	100	8	22.57	2.82	47	10.61	1.32
1st Louisiana foot.....	695	560	135	3	19.42	6.47	55	7.91	2.63
2d.....do.....	895	739	156	3	17.43	5.81	69	12.97	4.32
3d.....do.....	795	694	101	3	12.70	4.23	22	3.01	1.00
4th.....do.....	770	646	124	3	16.10	5.36	9	.85	.11
5th.....do.....	847	756	91	3	10.64	3.54	28	.33	.11
6th.....do.....	833	646	187	3	22.45	7.48	16	.19	.06
Blanchard's company.....	93	69	24	9½	25.80	2.71	10	11.11	1.16
Gally's battalion.....	199	155	44	3	24.67	8.22	8	.40	.13
Biscoe's battalion, mounted.....	616	414	202	12	32.47	2.70	116	10.80	.90
De Russy's battalion, foot.....	1,050	675	375	18½	35.71	1.93	152	14.47	.78
1 battalion Fiesca's foot.....	623	360	263	13	42.22	2.78	119	19.07	1.46
1st regiment Arkansas mounted.....	800	595	205	11½	25.63	2.23	153	19.31	1.68
1 independent company, mounted....	100	76	24	10½	24.03	2.28	16	16.00	1.42
Johnson's Texas foot rifles.....	755	674	81	2¼	10.74	4.77	30	3.98	1.76
Hays' cavalry.....	598	413	185	11½	31.23	2.78	155	2.59	.23
Chevallie's battalion.....	497	371	126	15½	25.35	1.60	64	1.28	.81
Hays' mounted rifles.....	666	481	185	8½	27.77	3.42	16	2.40	.29
Young's rangers.....	661	636	25	2½	3.78	1.04	17	2.57	.96
Wood's rangers.....	816	524	292	3½	36.27	9.30	173	21.20	5.43
McCullough's company.....	87	74	13	12	14.94	1.24	10	11.49	.95
Gray's company.....	90	68	22	12	24.45	2.03	9	16.30	1.35
Black Beaver's company.....	37	35	2	2	5.40	2.70	None.		
Leefield's company.....	72	41	31	10½	43.06	4.10	13	1.80	.17
Lamar's company.....	86	79	7	12	8.14	.67	1	.86	.07
McCullough's company.....	164	149	15	9	9.15	1.10	5	3.04	.33
1 Kentucky mounted volunteers....	830	493	337	12½	40.62	3.24	262	31.57	2.52
1st Kentucky volunteers, foot.....	794	520	274	12	34.53	2.87	188	23.67	1.80
2d.....do.....do.....	915	580	335	12½	35.07	2.80	219	24.20	1.93
3d.....do.....do.....	1,049	742	307	8½	39.27	3.44	259	24.68	2.90
4th.....do.....do.....	1,087	829	258	8½	23.73	2.79	212	19.50	2.29
1st independent comp. vols., foot....	85	66	19	11½	22.35	1.94	13	15.29	1.33
1st Tennessee cavalry.....	927	653	274	11½	29.55	2.51	255	27.51	2.34
1st Tennessee foot.....	1,054	367	687	12	65.18	5.43	628	59.59	4.96
2d.....do.....do.....	701	332	369	12	52.65	4.38	326	46.51	3.87
3d.....do.....do.....	954	665	289	9½	30.29	3.10	210	22.01	2.25
4th.....do.....do.....	801	593	208	10	25.97	2.59	183	22.84	2.28
5th.....do.....do.....	1,046	850	196	8½	18.74	2.20	145	13.86	1.63
1 indep't comp'y cavalry, mounted....	132	99	33	14	25.00	1.78	30	22.72	1.62
1st Ohio volunteers, foot.....	865	525	340	12½	39.29	3.14	231	26.72	2.13
2d.....do.....do.....	770	516	254	12	32.99	2.74	183	23.76	1.98
3d.....do.....do.....	814	615	199	12	24.44	2.04	139	17.07	1.42
4th.....do.....do.....	1,030	709	321	13½	31.17	2.49	173	16.79	1.24
5th.....do.....do.....	1,102	756	346	11	31.40	2.85	145	13.17	1.19
1st Indiana company, foot.....	103	52	51	9	49.52	5.50	14	13.59	1.51
1 Indiana company, horse.....	96	81	15	14	15.62	1.11	11	11.45	.81
1st independent volunteers, foot....	861	465	396	12	45.99	3.83	355	41.28	3.43
2d.....do.....do.....	856	594	262	12	30.60	2.55	189	22.07	1.83
3d.....do.....do.....	867	624	243	12	28.36	2.36	220	25.38	2.11



## ABSTRACT—Continued.

REGIMENTS.	Aggregate received into service during the war.	Aggregate mustered out of service.	Total loss from discharges, deaths, resignations, and desertions, &c., &c.	Term of service—mo's.	Total loss per cent.	Loss per cent. per month.	Loss by disease.	Total loss per cent. by disease.	Loss per ct. per month by disease.
4th independent volunteers, foot . . .	928	658	270	14	29.09	2.07	215	23.16	1.65
5th . . . do . . . do . . . do . . .	934	681	253	9½	27.09	2.63	205	21.94	2.30
1st Illinois volunteers, foot . . . . .	892	697	195	11½	21.86	1.98	102	11.43	1.01
2d . . . do . . . do . . . do . . .	908	662	246	11½	27.08	2.35	143	15.75	1.36
3d . . . do . . . do . . . do . . .	913	567	346	10½	37.90	3.60	322	35.27	2.93
4th . . . do . . . do . . . do . . .	813	508	305	10½	37.52	3.57	171	31.03	2.00
6th . . . do . . . do . . . do . . .	1,038	568	470	12½	45.28	3.62	415	43.32	3.46
2 companies mounted Illinois vols . .	198	138	60	10½	33.33	2.17	57	25.91	2.46
1st Michigan volunteers, foot . . . . .	1,040	672	369	7½	28.15	3.55	188	19.79	2.63

[The tables which follow are from the report of the Adjutant General of December 3, 1849.]

*General view of the subjects of inquiry, showing the aggregate of the regulars and volunteers employed during the war, with their average duration of service, and the casualties incident to each description of force.*

	FORCES EMPLOYED & MUSTERED INTO SERVICE.			DISCHARGES.				DEATHS.								WOUNDED IN BATTLE.			Resignations.	Desertions.	
	Aggregate officers and men.	Average length of service during the war.	By expiration of service.	For disability.	By order and civil authority.	Aggregate number of discharges.	Killed in battle.		Died of wounds.		Total killed and died of wounds.		Ordinary.		Accidental.	Aggregate number of deaths—officers and men.	Officers.	Men.			Aggregate.
							Officers.	Men.	Officers.	Men.	Officers.	Men.	Officers.	Men.							
		Mos																			
Old establishment .....	15,736	26	1,561	1,782	373	3,716	41	422	22	307	63	729	49	2,574	139	3,554	118	1,685	1,803	37	2,247
Additional force .....	11,186	15	12	767	114	893	5	62	5	71	10	133	36	2,055	30	2,264	36	236	272	92	602
Aggregate of regular army..	26,922	....	1,573	2,549	487	4,609	46	484	27	378	73	862	85	4,629	169	5,818	154	1,921	2,075	129	2,849
<i>Volunteer force.</i>																					
General staff .....	272	....	.....	.....	47	47	1	....	....	....	1	.....	16	.....	....	17	....	.....	.....	48	.....
Regiments and corps, .....	73,260	10	50,573	7,200	1,969	9,169	46	467	....	100	46	567	(*)	46,256	192	7,061	129	1,189	1,318	279	3,876
Aggregate regular and volunteer forces .....	100,454	....	52,146	9,749	2,503	13,825	93	951	27	478	120	1,429	101	10,885	361	12,896	283	3,110	3,393	456	6,725

\* In the reports of the deaths of volunteers of ordinary disease, officers are not discriminated.

*General return of the number of commissioned officers, non-commissioned officers, musicians, artificers, and privates of the regular army, killed, wounded, and died of wounds in the several conflicts with the Mexican troops, in the year 1846.*

REGIMENTS AND CORPS.	KILLED IN BATTLE.			WOUNDED.			Aggregate killed and wounded.	DIED OF WOUNDS.		
	Officers.	Men.	Total.	Officers.	Men.	Total.		Officers.	Men.	Total.
<i>Affair of the reconnoitring party, under Captain Thornton, 2d dragoons, on the left bank of the Rio Grande, April 25, 1846.</i>										
Total.....	1	10	11		6	6	17			
<i>Battle of Palo Alto, Texas, May 8, 1846.</i>										
2d regiment dragoons.....					5	5	5			
1st regiment artillery.....					5	5	5		1	1
2d.....do.....				1	4	5	5			
3d.....do.....		1	1	1		1	2	1		1
4th.....do.....		1	1		3	3	4		2	2
4th regiment infantry.....		1	1	1	1	2	3	1		1
5th.....do.....					5	5	5			
8th.....do.....		2	2		17	17	19		5	5
Total.....		5	5	3	40	43	48	2	8	10
<i>Battle of Resaca de la Palma, Texas, May 9, 1846.</i>										
2d regiment dragoons.....	1	7	8		6	6	14			
2d regiment artillery.....		2	2		2	2	4		1	1
3d.....do.....					4	4	4			
4th.....do.....				1	5	6	6		1	1
3d regiment infantry.....		2	2	1	5	6	8			
4th.....do.....	1	3	4		6	6	10		1	1
5th.....do.....		9	9	3	21	24	33		3	3
8th.....do.....	1	7	8	7	28	35	43		5	5
Total.....	3	30	33	12	77	89	122		11	11
<i>Battle of Monterey, Mexico, September 21, 22, and 23, 1846.</i>										
Engineers.....				1		1	1			
Topographical engineers.....				1		1	1	1		1
2d regiment dragoons.....					2	2	2			
1st regiment artillery.....		1	1		1	1	2			
2d.....do.....					2	2	2			
3d.....do.....		4	4		22	22	26		3	3
4th.....do.....		4	4		8	8	12		1	1
1st regiment infantry.....		12	12	3	28	31	43	2		2
2d.....do.....	1		1				1			
3d.....do.....	5	13	18	2	31	33	51	1	1	2
4th.....do.....	1	11	12	1	23	24	36	1	3	4
5th.....do.....				1	9	10	10			
7th.....do.....		1	1	2	6	8	9			
8th.....do.....	1	1	2	1	6	7	9			
Total.....	8	47	55	12	138	150	205	5	8	13
<i>Siege of Fort Brown, May 4 to 9, 1846.</i>										
3d regiment artillery.....				1		1	1			
5th regiment infantry.....					1	1	1			
7th regiment infantry.....		1	1	1	6	7	8	1		1
Total.....		1	1	2	7	9	10	1		1

## GENERAL RETURN—Continued.

REGIMENTS AND CORPS.	KILLED IN BATTLE.			WOUNDED.			Aggregate killed and wounded.	DIED OF WOUNDS.		
	Officers.	Men.	Total.	Officers.	Men.	Total.		Officers.	Men.	Total.
<i>Affair of San Pasqual, California, December, 6, 1846.</i>										
General staff.....				1		1	1			
Topographical engineers.....				1		1	1			
1st regiment dragoons.....	3	14	17		11	11	28			
Total.....	3	14	17	2	11	13	30			
<i>Incidental loss.</i>										
April 19, 1846.....	1		1				1			
April 21, 1846.....	1		1				1			
May 18, 1846.....	1		1				1			
Total.....	3		3				3			

*Recapitulation of loss in battle of the regular army, by regiments and corps, in the campaign of 1846.*

REGIMENTS AND CORPS.	KILLED IN BATTLE.			WOUNDED.			Aggregate killed and wounded.	DIED OF WOUNDS.		
	Officers.	Men.	Total.	Officers.	Men.	Total.		Officers.	Men.	Total.
General staff.....				1		1	1			
Engineers.....				1		1	1			
Topographical engineers.....				2		2	2	1		1
1st regiment dragoons.....	3	14	17		11	11	28			
2d.....do.....	2	17	19		19	19	38			
1st regiment artillery.....		1	1		6	6	7		1	1
2d.....do.....		2	2	1	8	9	11		1	1
3d.....do.....		5	5	2	26	28	33	1	3	4
4th.....do.....		5	5	1	16	17	22		4	4
1st regiment infantry.....		12	12	3	28	31	43	2		2
2d.....do.....	1		1				1			
3d.....do.....	5	15	20	3	36	39	59	1	1	2
4th.....do.....	2	15	17	2	30	32	49	2	4	6
5th.....do.....		9	9	4	36	40	49		3	3
7th.....do.....		2	2	3	12	15	17	1		1
8th.....do.....	2	10	12	8	51	59	71		10	10
Corps not specified.....	3		3				3			
Aggregate in the campaign of 1846.....	18	107	125	31	279	310	435	8	27	35



*General return of the number of commissioned officers, non-commissioned officers, musicians, artificers, and privates of the regular army, killed, wounded, and died of wounds, in the several conflicts with the Mexican troops, in the year 1847.*

REGIMENTS AND CORPS.	KILLED IN BATTLE.			WOUNDED.			Aggregate killed and wounded.	DIED OF WOUNDS.		
	Officers.	Men.	Total.	Officers.	Men.	Total.		Officers.	Men.	Total.
<i>Battle of Buena Vista, February 22 and 23, 1847.</i>										
General staff	1		1	2		2	3			
1st regiment dragoons				1	5	6	6			
2d.....do				1	1	2	2			
3d regiment artillery		1	1	1	18	19	20		1	
4th.....do		4	4		7	7	11		1	1
Total	1	5	6	5	31	36	42		2	2
<i>Investment and siege of Vera Cruz, commencing 9th and ending 28th March, 1847.</i>										
2d regiment dragoons		1	1	1	4	5	6		1	1
Regiment mounted riflemen		1	1		5	5	6			
1st regiment artillery					1	1	1			
2d.....do		1	1		9	9	10		1	1
3d.....do	1	2	3		2	2	5		1	1
4th.....do					1	1	1			
2d regiment infantry	1		1		1	1	2			
8th.....do					2	2	2			
Total	2	5	7	1	25	26	33		3	3
<i>Battle of Cerro Gordo, April 18 and 19, 1847.</i>										
Topographical engineers				1		1	1			
Ordnance					1	1	1			
2d regiment dragoons				1		1	1			
Regiment mounted riflemen	1	10	11	2	61	63	74	2	8	10
1st regiment artillery		10	10		45	45	55		1	1
4th.....do					3	3	3			
2d regiment infantry		5	5	2	14	16	21			
3d.....do		5	5	1	26	27	32		1	1
7th.....do		9	9	1	42	43	52		9	9
Voltigeurs				1		1	1			
Total	1	39	40	9	192	201	241	2	19	21
<i>Battles of Contreras and Churubusco, Mexico, August 19 and 20, 1847.</i>										
Engineers					4	4	4			
Ordnance		4	4	1	10	11	15		1	1
1st regiment dragoons		4	4	1		1	5			
2d.....do	1		1		1	1	2			
3d.....do		3	3	2	1	3	6			
Regiment mounted riflemen		4	4	1	11	12	16		1	1
1st regiment artillery	4	9	13	3	39	42	55	1		1
2d.....do		7	7	1	75	76	83		3	3
3d.....do		7	7	1	26	27	34		4	4
4th.....do		4	4	1	31	32	36			
2d regiment infantry	2	13	15	5	70	75	90	1	1	2
3d.....do		5	5	3	26	29	34			
4th.....do		1	1		6	6	7		1	1
5th.....do		6	6	3	54	57	63		3	3
6th.....do		9	9	2	79	81	90	1	9	9
7th.....do	1	3	4	2	11	13	17		1	1
8th.....do		2	2	1	33	34	36		4	4
9th.....do		3	3	4	42	46	49			
10th.....do				1		1	1			

## GENERAL RETURN—Continued.

REGIMENTS AND CORPS.	KILLED IN BATTLE.			WOUNDED.			Aggregate killed and wounded.	DIED OF WOUNDS.		
	Officers.	Men.	Total.	Officers.	Men.	Total.		Officers.	Men.	Total.
<i>Battles of Contreras and Churubusco—Continued.</i>										
11th regiment infantry		1	1		7	7	8			
12th.....do.		2	2	2	22	24	26			
14th.....do.		1	1		1	1	2			
15th.....do.	2	6	8	5	61	66	74	1		1
Voltigeurs		2	2		4	4	6			
Total	10	96	106	39	614	653	759	4	28	31
<i>Battle of El Molino del Rey, Mexico, September 8, 1847.</i>										
Engineers				2		2	2			
Ordnance		1	1		1	1	2			
2d regiment dragoons		6	6	3	25	28	34		4	4
3d.....do.				2		2	2			
Regiment mounted riflemen				1	12	13	13			
2d regiment artillery	1	6	7	2	56	58	65	2	6	8
3d.....do.	2	3	5		26	26	31		7	7
4th.....do.		2	2		3	3	5			
4th regiment infantry		8	8	3	34	37	45		8	8
5th.....do.	4	27	31	4	98	102	133	2	8	10
6th.....do.		23	23	3	47	50	73	1	8	9
8th.....do.		30	30	10	106	116	146	2	21	23
11th.....do.	2	8	10	3	30	33	43			
14th.....do.		1	1	3	6	9	10		1	1
Voltigeurs				5	95	100	100			
Surgeons				2		2	2	1		1
Total	9	115	124	43	539	582	706	8	63	71
<i>Battle of Chapultepec and City of Mexico, September 12, 13, and 14, 1847.</i>										
Engineers				3	1	4	4			
Ordnance				1	8	9	9			
Regiment mounted riflemen		8	8	7	53	60	68		6	6
1st regiment artillery		6	6	2	23	25	31			
2d.....do.		7	7		17	17	24		9	9
3d.....do.					5	5	5			
4th.....do.	2	10	12	2	35	37	49		3	3
2d regiment infantry		7	7	2	33	35	42			
3d.....do.		10	10		48	48	58		3	3
4th.....do.	1	10	11	3	35	38	49	1	6	7
5th.....do.	1	2	3	1	9	10	13			
6th.....do.		2	2		2	2	4		2	2
7th.....do.	1	6	7		6	6	13		3	3
8th.....do.		2	2	2	17	19	21		4	4
9th.....do.	1	7	8		22	22	30			
14th.....do.		4	4	4	8	12	16		3	3
15th.....do.		5	5	1	17	18	23			
Voltigeurs		5	5	6	37	43	48			
Marine corps	1	6	7	3	21	24	31			
Total	7	97	104	37	397	434	538	1	39	40

*Loss (regular army) in incidental affairs and skirmishes with the enemy in 1847.*

REGIMENTS AND CORPS.	KILLED IN BATTLE.			WOUNDED.			Aggregate killed and wounded.	DIED OF WOUNDS.		
	Officers.	Men.	Total.	Officers.	Men.	Total.		Officers.	Men.	Total.
<i>Affair of Brigadier General Kearny, United States army, at San Gabriel, California, January 8 and 9, 1847.</i>										
1st regiment dragoons .....					1	1	1			
United States navy .....		1	1	1	9	10	11			
Marine corps .....					1	1	1			
Total .....		1	1	1	11	12	13			
<i>Incidental loss, January 13, 1847</i>										
	1		1				1			
<i>Affair of Colonel S. Price, at Pueblo de Taos, Mexico, February 4, 1847.</i>										
1st regiment dragoons .....		5	5	1	18	19	24	1		1
<i>Affair under Brevet Colonel J. S. McIntosh, 5th infantry, June 6, 1847.</i>										
3d regiment dragoons .....		4	4		6	6	10			
3d regiment infantry .....					1	1	1			
4th.....do.....		2	2		4	4	6			
15th.....do.....					4	4	4			
Total .....		6	6		15	15	21			
<i>Affair of Colonel De Russy, Louisiana volunteers, at Calaboso river, July 12, 1847.</i>										
3d regiment artillery .....					5	5	5			
<i>Affairs under Major Lally, 9th infantry, at Paso Ovejas, August 10, 1847; National Bridge, August 12, 1847; Cerro Gordo, August 15, 1847; and Las Animas, August 19, 1847, &amp;c.</i>										
3d regiment dragoons.....					1	1	1			
2d regiment infantry.....					1	1	1			
4th.....do.....		4	4		9	9	13			
5th.....do.....		1	1		9	9	10			
9th.....do.....				1		1	1			
11th.....do.....		1	1	1	5	6	7			
12th.....do.....		2	2	2	11	13	15			
15th.....do.....					15	15	15			
Voltigeurs.....		1	1	2	7	9	10	2		2
Marine corps .....				1		1	1			
Artillery recruits.....					9	9	9			
Total .....		9	9	7	67	74	83	2		2
<i>Under Brevet Colonel T. Childs, 1st artillery, siege of Puebla, Mexico, commencing September 13, and ending October 12, 1847.</i>										
2d regiment dragoons.....		1	1				1			
3d.....do.....					1	1	1			
Regiment mounted riflemen.....		1	1		2	2	3			
2d regiment artillery .....					3	3	3			
4th.....do.....					1	1	1			
2d regiment infantry.....					1	1	1			
Voltigeurs.....		1	1		3	3	4			
Marines .....					2	2	2			
Total .....		3	3		13	13	16			





*Recapitulation of loss in battle, of the regular army—Continued.*

REGIMENTS AND CORPS.	KILLED IN BATTLE.			WOUNDED.			Aggregate killed and wounded.	DIED OF WOUNDS.		
	Officers.	Men.	Total.	Officers.	Men.	Total.		Officers.	Men.	Total.
14th regiment of infantry .....		6	6	7	15	22	28		4	4
15th.....do.....	2	11	13	6	97	103	116	1		1
16th.....do.....										
Voltigeurs.....		9	9	14	146	160	169	2		2
Marine corps.....	1	6	7	4	24	28	35			
Artillery recruits.....					9	9	9			
Corps not specified.....	1	12	13		11	11	24			
United States navy.....		1	1	1	9	10	11			
Aggregate in the campaign of 1847.....	33	398	431	143	1,953	2,096	2,527	18	154	172
Aggregate in the campaign of 1846.....	18	107	125	31	279	310	435	8	27	35
Aggregate regular army killed and wounded in 1846 and 1847.....	51	505	556	174	2,232	2,406	2,962	26	181	207

*General return of the number of commissioned officers, non-commissioned officers, musicians, artificers, and privates, of volunteers killed and wounded, or died of wounds, in the several conflicts with the Mexican troops, in the year 1846.*

REGIMENTS AND CORPS.	KILLED IN BATTLE.			WOUNDED.			Aggregate killed and wounded.	DIED OF WOUNDS.		
	Officers.	Men.	Total.	Officers.	Men.	Total.		Officers.	Men.	Total.
<i>Affair of Captain Walker, near Point Isabel, Texas, April 28, 1846.</i>										
Texas rangers .....		10	10				10			
<i>Battle of Monterey, September 21, 22, and 23, 1846.</i>										
General staff .....				1		1	1			
Maryland and Dist. Columbia battalion volunteers .....	1	5	6		17	17	23		3	3
1st regiment Tennessee .....	2	24	26	4	75	79	105		2	2
1st regiment Ohio .....	1	14	15	6	33	39	54			
Louisiana volunteers .....		2	2		4	4	6		1	1
1st regiment Kentucky .....					5	5	5			
Mississippi rifles .....		9	9	5	47	52	61		1	1
Texas volunteers.....	1	5	6	2	19	21	26	1	2	3
Total.....	5	59	64	18	200	218	282	1	9	10
<i>Affair of General Kearny, near San Pasqual, California, December 6, 1846.</i>										
California volunteers .....		1	1	2		2	3			
<i>Affair of Colonel Doniphan, at Brazito, New Mexico, December 26, 1846.</i>										
Missouri volunteers.....					7	7	7			
Aggregate in the campaign of 1846.....	5	70	75	20	207	227	302	1	9	10

*General return of the number of commissioned officers, non-commissioned officers, musicians, artificers, and privates, of volunteers killed and wounded, or died of wounds, in the several conflicts with the Mexican troops, in the year 1847.*

REGIMENTS AND CORPS.	KILLED IN BATTLE.			WOUNDED.			Aggregate killed and wounded.	DIED OF WOUNDS.		
	Officers.	Men.	Total.	Officers.	Men.	Total.		Officers.	Men.	Total.
<i>Battle of Buena Vista, Mexico, February 22 &amp; 23, 1847.</i>										
Mississippi rifles .....	2	38	40	5	51	56	96	-----	3	3
1st regiment Illinois .....	3	26	29	2	23	25	54	-----	1	1
2d.....do .....	10	37	47	6	68	74	121	-----	2	2
Texas company .....	2	12	14	1	1	2	16	-----		
Indiana brigade staff .....				1		1	1	-----		
2d regiment Indiana .....	3	29	32	8	28	36	68	-----		
3d.....do .....	1	8	9	4	52	56	65	-----		
2d regiment Kentucky .....	3	41	44	3	54	57	101	-----	2	2
Arkansas cavalry .....	2	15	17	1	31	32	49	-----		
1st Kentucky cavalry .....	1	26	27	4	29	33	60	-----	2	2
Total .....	27	232	259	35	337	372	631	-----	10	10
<i>Investment and siege of Vera Cruz, Mexico, commencing March 9, and ending March 27, 1847.</i>										
1st regiment Pennsylvania .....		2	2		10	10	12	-----		
2d.....do .....					4	4	4	-----		
Regiment South Carolina .....				1	4	5	5	-----		
2d regiment Tennessee .....					1	1	1	-----		
Regiment Georgia .....					5	5	5	-----		
Total .....		2	2	1	24	25	27	-----		
<i>Battle of Cerro Gordo, Mexico, April 17 and 18, 1847.</i>										
1st regiment Tennessee .....		1	1	8	4	12	13	-----	1	1
2d.....do .....	2	13	15	1	37	38	53	-----	3	3
Regiment Kentucky .....		3	3	1	9	10	13	-----	2	2
1st regiment Pennsylvania .....					10	10	10	-----		
2d.....do .....					17	17	17	-----		
3d regiment Illinois .....		1	1	1	15	16	17	-----		
4th.....do .....	1	3	4	5	39	44	48	-----	8	8
Regiment New York .....				1	4	5	5	-----		
Total .....	3	21	24	17	135	152	176	-----	14	14
<i>Battles of Contreras and Churubusco, Mexico, August 19 and 20, 1847.</i>										
Regiment New York .....	1	15	16	10	76	86	102	-----	19	19
Regiment South Carolina .....	3	8	11	11	115	126	137	-----	26	26
Total .....	4	23	27	21	191	212	239	-----	45	45
<i>Battles of Chapultepec and city of Mexico, September 12, 13, and 14, 1847.</i>										
Regiment New York .....	1	10	11	8	57	65	76	-----		
Regiment South Carolina .....	2	14	16	9	75	84	100	-----		
2d regiment Pennsylvania .....		7	7	6	84	90	97	-----	10	10
Total .....	3	31	34	23	216	239	273	-----	10	10



*Loss (volunteers) in incidental affairs and skirmishes with the enemy in 1847.*

REGIMENTS AND CORPS.	KILLED IN BATTLE.			WOUNDED.			Aggregate killed and wounded.	DIED OF WOUNDS.		
	Officers.	Men.	Total.	Officers.	Men.	Total.		Officers.	Men.	Total.
<i>Affair of General Kearny, near San Gabriel, California, January 8 and 9, 1847.</i>				1	1	2	2			
<i>Affairs of Colonel S. Price, Missouri volunteers, at La Cañada, January 24, 1847, Embudo, January 29, 1847, and Pueblo de Taos, February 4, 1847.</i>										
Missouri volunteers		3	3	5	25	30	33		4	4
Santa Fe volunteers					3	3	3			
Total		3	3	5	28	33	36		4	4
<i>Affair of Colonel Doniphan, Missouri volunteers, near Sacramento, New Mexico, February 28, 1847.</i>										
Missouri volunteers					5	5	5			
<i>Affair of Colonel De Russy, Louisiana volunteers, near Calaboso, Mexico, July 12, 1847.</i>										
Maryland volunteers	1	6	7	1	3	4	11			
Louisiana volunteers		5	5	1	2	3	8			
Total	1	11	12	2	5	7	19			
<i>Affairs of Major Lally, 9th infantry, at Paso Orejas, August 10, National Bridge, August 12, 1847, &amp;c.</i>										
Georgia volunteers		2	2		3	3	5			
Louisiana volunteers					3	3	3			
Total		2	2		6	6	8			
<i>Under Brevet Colonel T. Childs, 1st artillery, siege of Puebla, Mexico, commencing September 13, 1847, and ending October 12, 1847.</i>										
First regiment Pennsylvania		15	15	2	27	29	44			
Second regiment Pennsylvania					2	2	2			
Regiment South Carolina					1	1	1			
Spy company				1	4	5	5			
Total		15	15	3	34	37	52			
<i>Affair of Major Lane, Virginia volunteers, November 21, 1847.</i>										
Virginia volunteers		1	1		4	4	5			
<i>Affair of General Lane, United States volunteers, near Galaxra, November 24, 1847.</i>										
Corps not specified		1	1	1	1	2	3			

*Loss (volunteers) in incidental affairs and skirmishes with the enemy in 1847—Continued.*

REGIMENTS AND CORPS.	KILLED IN BATTLE.			WOUNDED.			Aggregate killed and wounded.	DIED OF WOUNDS.		
	Officers.	Men.	Total.	Officers.	Men.	Total.		Officers.	Men.	Total.
<i>Incidental loss.</i>										
January 24, 1847.....	1		1		3	3	4			
May 27, 1847.....		1	1		2	2	3			
June 27, 1847.....	1	2	3				3			
July 6, 1847.....	1	4	5		9	9	14			
On road to Huamantla.....	1		1				1			
Total.....	4	7	11		14	14	25			
<i>Affair of General Pross, United States volunteers, at Santa Cruz de Rosales, March 16, 1848.</i>										
Third Missouri mounted volunteers.....	1	3	4		8	8	12			
Santa Fé volunteers.....					1	1	1			
Chihuahua rangers.....					1	1	1			
Total.....	1	3	4		10	10	14			
<i>Affair of General Lane, Sapulphan, Mexico, February 25, 1848.</i>										
Texas rangers.....				1	4	5	5			
<i>Affair of Colonel Burton, New York volunteers, at "Tos dos Santos," April 30, 1848.</i>										
New York volunteers.....				1		1	1			
<i>Under Lieutenant Hapwood, United States navy, siege of San José, Lower California, February 7 and 10, 1848.</i>										
Sailors, marines, and California volunteers.....	1	2	3		4	4	7			
<i>Affair of Captain Steele, New York and California volunteers, San Antonio, March 16, 1848.</i>										
New York and California volunteers.....		1	1				1			

# STATISTICS OF THE WAR WITH MEXICO.

## Recapitulation of loss in battle of the volunteer forces in the campaign of 1847.

REGIMENTS AND CORPS.	KILLED IN BATTLE.			WOUNDED.			Aggregate killed and wounded.	DIED OF WOUNDS.		
	Officers.	Men.	Total.	Officers.	Men.	Total.		Officers.	Men.	Total.
Indiana brigade, staff.....				1		1	1			
Mississippi rifles.....	2	38	40	5	51	56	96		3	3
1st regiment, Illinois.....	3	26	29	2	23	25	54		1	1
2d regiment, Illinois.....	10	37	47	6	68	74	121		2	2
3d regiment, Illinois.....		1	1	1	15	16	17			
4th regiment, Illinois.....	1	3	4	5	39	44	48		8	8
Texas company.....	2	12	14	1	1	2	16			
2d regiment, Indiana.....	3	29	32	8	28	36	68			
3d regiment, Indiana.....	1	8	9	4	52	56	65			
Regiment Kentucky cavalry.....	1	26	27	4	29	33	60			
1st regiment, Kentucky.....		3	3	1	9	10	13		2	2
2d regiment, Kentucky.....	3	41	44	3	54	57	101		2	2
Regiment Arkansas cavalry.....	2	15	17	1	31	32	49		2	2
1st regiment, Pennsylvania.....		17	17	2	47	49	66			
2d regiment, Pennsylvania.....		7	7	6	107	113	120		10	10
Regiment South Carolina.....	5	22	27	21	195	216	243		26	26
1st regiment, Tennessee.....		1	1	8	4	12	13		1	1
2d regiment, Tennessee.....	2	13	15	1	38	39	54		3	3
Regiment Georgia.....		2	2		8	8	10			
2d regiment, New York.....	2	25	27	19	137	156	183		19	19
California volunteers.....				1	1	2	2			
Missouri volunteers.....	1	6	7	5	38	43	50		4	4
Santa Fé volunteers.....					4	4	4			
Louisiana volunteers.....		5	5	1	5	6	11			
Spy company.....				1	4	5	5			
Maryland volunteers.....	1	6	7	1	3	4	11			
Virginia volunteers.....		1	1		4	4	5			
Incidental loss.....	4	7	11		14	14	25			
Corps not specified.....		1	1	1	1	2	3			
Chihuahua rangers.....					1	1	1			
Texas rangers.....				1	4	5	5			
1st regiment, New York.....				1		1	1			
Sailors, marines, and California volunteers.....	1	2	3		4	4	7			
New York and California volunteers.....		1	1				1			
Aggregate in the campaign of 1847.....	44	355	399	111	1,019	1,130	1,529		83	83
Aggregate in the campaign of 1846.....	5	70	75	20	207	227	302	1	9	10
Aggregate volunteers killed and wounded in 1846 and 1847.....	49	425	474	131	1,226	1,357	1,831	1	92	93

WAR DEPARTMENT.

Adjutant General's Office, Washington, December 3, 1849.

R. JONES,

Adjutant General United States Army.

The aggregates reported in the several recapitulations of "loss in battle," do not agree with those reported in the first table of this series. The losses in battle are obtained from the field reports of the commanders, forwarded immediately after the action, and are liable to revision when subsequently reported in the regimental returns and company rolls.

The statistics of the war are presented as close approximations only; the difficulties attending their compilation being so numerous as to render the attainment of positively accurate results impracticable.





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STATISTICS  
OF  
THE RECRUITING SERVICE.

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## STATISTICS OF THE RECRUITING SERVICE.

THE army of the United States, as at present organized by law, numbers, in the aggregate, 12,698 men; of whom 1,040 are commissioned officers, the remaining 11,658 being enlisted soldiers. By an act of Congress, approved June 17, 1850, the President is authorized "to increase to seventy-four the number of privates in any company serving at the several military posts on the western frontier, and at remote and distant stations." There being on the 1st of January, 1856, one hundred and eighty-one companies serving at distant stations and on the western frontier, the authorized increase in the number of privates was then 5,164; making the total enlisted 16,822, and the aggregate 17,862. If all the companies were serving at remote stations, the additional number of privates allowed would be 5,620, making the total enlisted 17,278, and the aggregate 18,318.—(See Army Register, 1856.)

As, however, there are continual losses, by the retirement of men whose terms of service have expired, by desertions, deaths, and other casualties, the army rarely attains the legal strength, and there is always a certain deficiency of material to be supplied by the *recruiting service*.

The recruiting service is conducted by the Adjutant General, under the direction of the Secretary of War. From the annual reports of that officer, it appears that the number of recruits enlisted in the army during the last six years has been as follows:

From October 1, 1849, to September 30, 1850 .....	3,695
“ “ “ 1850 “ “ 1851 .....	4,567
“ “ “ 1851 “ “ 1852 .....	4,174
“ “ “ 1852 “ “ 1853 .....	2,863
“ “ “ 1853 “ “ 1854 .....	4,221
“ “ “ 1854 “ “ 1855 .....	10,546
<b>Total.....</b>	<b>30,066</b>
<b>Annual average.....</b>	<b>5,011</b>

In the United States, where there is, as a general rule, ample and remunerating employment for mechanics and laboring men, there is but little inducement to enter a service where the pay is small, and the duties both arduous and dangerous. It is, accordingly, found that the material offered in time of peace is not of the most desirable character, consisting principally of newly arrived immigrants, of those broken down by bad habits and dissipation, the idle, and the improvident.

The principal rendezvous are located in the large cities; and of 2,726 men enlisted from January 1 to December 31, 1852, 1,234, or nearly one-half, were enlisted in the State of New York; and of these, fully two-thirds were from the city of the same name. To illustrate the character of the material offering at the different recruiting stations, the following table has

been prepared. It shows the places of enlistment, the numbers enlisted and rejected, and the causes of rejection:

*Recruits enlisted and rejected in the year 1852, at the rendezvous of the general recruiting service.*

States.	No. enlisted.	Rejected as minors.	Rejected as undersized.	Rejected as over age.	Moral disability.	Intemperate.	Malformed.	Unsound constitution.	Mental disability.	Impaired vision.	Impaired hearing.	Ruptured.	Varicose veins.	Letter D branded.	Extreme ignorance.	Married.	Cannot speak English.
New York.....	1,234	1,442	710	312	97	823	132	345	8	85	48	216	571	37	16	310	1,447
Pennsylvania.....	541	790	309	112	7	486	56	43	5	15	2	16	207	6	7	112	193
Maryland.....	263	419	401	168	.....	259	29	36	1	3	.....	23	94	5	1	102	509
Kentucky.....	221	152	139	42	2	210	5	45	.....	9	4	45	65	.....	.....	46	50
Massachusetts.....	197	146	60	12	.....	63	15	8	1	2	.....	6	42	2	.....	25	.....
Missouri.....	116	22	46	13	.....	37	4	18	1	.....	1	1	8	1	.....	4	33
Illinois.....	98	130	117	61	.....	58	.....	.....	.....	.....	.....	7	78	.....	.....	47	200
Louisiana.....	51	24	3	.....	.....	15	.....	135	.....	.....	.....	.....	4	.....	8	.....	2
Rhode Island.....	5	37	21	12	.....	14	2	.....	.....	.....	.....	.....	2	.....	.....	11	.....
Total.....	2,726	3,162	1,806	732	106	1,965	243	630	16	114	55	314	1,071	51	32	657	2,434

Total examined..... 16,064

Total rejected..... 13,338

Total enlisted..... 2,726

Of the total offering, only 16.9 per cent. were considered fit for service. It is probable that the real per centage is much smaller even than this, as doubtless the non-commissioned officers do not bring to the notice of the recruiting officers and examining surgeons a large number who, either through age, intemperate habits, or broken constitutions, would certainly be rejected by them.

In the army of the United States, where the voluntary system for recruiting obtains, the duty of deciding on the efficiency of the recruit depends upon an examination by a recruiting officer and a military surgeon. Every consideration touching the economy and efficiency of the army demands that this examination be very thorough, both in regard to moral and physical disabilities. The regulations, therefore, enjoin that, "in passing a recruit, the medical officer is to examine him stripped, to see that he has free use of all his limbs; that his chest is ample; that his hearing, vision, and speech are perfect; that he has no tumors, or ulcerated or extensively cicatrized legs; no rupture or chronic cutaneous affection; that he has not received any contusion or wound of the head, that may impair his faculties; that he is not a drunkard, is not subject to convulsions, and has no infectious or other disorder, that may unfit him for military service." The surgeon is also required to certify, on honor, that the recruit passed by him is "free from all bodily defects and mental infirmity, which would in any way disqualify him from performing the duties of a soldier."

The following paragraph from the "Regulations for the Recruiting Service," is introduced to show the general qualifications necessary to enlistment:

"All free white male persons above the age of eighteen, and under thirty-five years, being at least five feet four and a half inches high, who are effective, able-bodied, sober, free from disease, and who have a competent knowledge of the English language, may be enlisted. This regulation, so far as it respects the height and age of the recruit, shall not extend to soldiers who may 're-enlist' into the service, or have served honestly and faithfully a previous enlistment in the army, or to musicians."

A very large proportion of the recruits are, as has been mentioned above, foreigners. Indeed,

by the foregoing table it will be perceived that 2,434 persons were rejected for not being able to speak the English language. A large proportion of the immigrants who are landed at our sea-port cities, where the army is principally recruited, are extremely destitute; and to those not finding immediate employment, the army, in its system of enlistments for the short period of five years, offers a temporary resource, of which many avail themselves. In this way the army assists in peopling the remote frontiers and territories: for the soldier, transported from the Atlantic to the stations on the western or other frontiers, becomes in many cases, when discharged, a *settler*, and enters into agricultural or other pursuits of civil life.

Of 5,000 recruits enlisted in the army during the years 1850 and 1851, 1,484 were native Americans, and 3,516 were foreigners.

The Americans came from the following States:

From New York.....	419	From Illinois.....	13
“ Pennsylvania.....	257	“ Indiana.....	13
“ Massachusetts.....	102	“ South Carolina.....	12
“ Virginia.....	87	“ North Carolina.....	10
“ Maryland.....	87	“ Missouri.....	9
“ Ohio.....	84	“ Michigan.....	8
“ Vermont.....	69	“ Louisiana.....	7
“ New Jersey.....	53	“ Delaware.....	6
“ Maine.....	50	“ District of Columbia.....	4
“ Connecticut.....	46	“ Georgia.....	4
“ Kentucky.....	41	“ Alabama.....	3
“ New Hampshire.....	38	“ Wisconsin.....	1
“ Rhode Island.....	32	“ Arkansas.....	1
“ Tennessee.....	23	“ Iowa.....	1

The foreigners were:

From Ireland.....	2113	From Norway.....	5
“ England.....	306	“ Holland.....	9
“ Scotland.....	126	“ Belgium.....	2
“ Wales.....	8	“ France.....	49
“ Canada.....	90	“ Switzerland.....	22
“ Nova Scotia.....	19	“ Poland.....	16
“ New Brunswick.....	13	“ Hungary.....	19
	—	“ Italy.....	13
Total from Great Britain and dependencies	2675	“ Austria.....	5
From Germany.....	678	“ Spain.....	2
“ Sweden.....	12	“ Prussia.....	1
“ Denmark.....	7	“ Finland.....	1

Many of these foreign recruits had been soldiers in their own countries, and some were doubtless refugees from political causes. A number, too, of deserters from the British army in Canada, find their way into our service, though they are rejected when the fact is known; as a soldier who has not proved faithful to his own flag, is not likely to prove true to another.

In the year 1852, fifty-one applicants for enlistment were rejected at the rendezvous in New York, as branded with the letter D, showing that they had been tried and punished for desertion. Most of these found their way over the Canada frontier.

The relative proportion of native and foreign recruits is reversed in time of war. During the war of 1812-'15 the regiments were almost wholly made up of Americans; and the volunteer and new regiments which were formed during the war with Mexico consisted almost



entirely of citizens born within the limits of the United States. Even in the general recruiting service, this fact is plainly shown; the following being the nativity of 5,000 recruits enlisted in the year 1847 for the regular army in Mexico.

Americans .....	3,639
British .....	771
Germans .....	473
Europeans generally .....	117
Total .....	5,000

The Americans were:

From New York .....	705	From New Hampshire.....	79
“ Pennsylvania.....	555	“ Alabama.....	48
“ Virginia.....	299	“ Rhode Island .....	32
“ Ohio.....	230	“ Delaware.....	21
“ Kentucky.....	218	“ District of Columbia .....	22
“ Maryland.....	168	“ Missouri.....	24
“ Tennessee.....	167	“ Michigan .....	22
“ North Carolina.....	146	“ Louisiana.....	21
“ New Jersey.....	126	“ Illinois.....	15
“ Connecticut.....	123	“ Mississippi.....	9
“ Maine.....	117	“ Arkansas.....	3
“ Indiana.....	108	“ Florida.....	1
“ Vermont.....	100	“ Iowa.....	1
“ Massachusetts.....	97		
“ South Carolina.....	93	Total.....	3639
“ Georgia.....	89		

As a body, these men were of much better material than those who enlist in time of peace. They were taller, more intelligent, had better constitutions and habits, and were for the most part young and enthusiastic. It is well known that fully 200,000 men offered their services as volunteer soldiers to the President of the United States at the commencement of the Mexican war. These men were mostly actuated either by motives of patriotism, or by a desire for change and excitement, and not by the hope of personal or pecuniary reward.

Medical officers on duty at recruiting rendezvous are required to transmit to the Surgeon General, monthly, returns of “recruits examined,” giving the name of each man examined, the place of his nativity, his age, his profession, and the causes of rejection, if any.

From the returns thus rendered, the following table has been compiled, showing the amount of disability among the recruits brought to the surgeon for examination.

For the convenience of comparison, and as a matter of general interest, the arrangement has been made according to nations, as far as it could be conveniently carried out.

Nationality.	No. of recruits.	Passed.	Rejected.
Americans.....	2,000	1,332	668
Germans.....	2,000	1,310	690
English and Scotch.....	2,000	1,272	728
Irish.....	2,000	1,240	760
Europeans generally.....	2,000	1,229	771
Total.....	10,000	6,383	3,617

From the above tabular statement, it will be perceived that the best material offering for service was, as we should naturally expect: first, our own native population; next, the Germans, who, as immigrants, are usually of a better class than those coming from the British islands; and, lastly, the Europeans generally, who are decidedly inferior in physique and morals. The Americans who offer, notwithstanding they take the first place in the above table, are mostly recruited in the larger cities, which, as is well known, never yield such able-bodied men as the agricultural districts. The difficulty of procuring remunerative employment, experienced by the lower classes of the people in Great Britain, and on the continent of Europe, added to the very great facilities for their transportation across the Atlantic, results in throwing upon our shores great numbers who have suffered from restricted and improper diet, scanty clothing, and other depressing causes, which notoriously deteriorate a population, and increase the numbers of diseased and malformed individuals.

The following table gives more in detail the causes of rejection in the cases of 5,000 individuals, taken in succession from the reports of examining surgeons, on file in the Surgeon General's office. It is interesting, as showing to some little extent the peculiarities of race in the distribution of diseases and malformations, and also the general causes which operate in rendering the lower classes generally unfit for soldiers. There is a remarkable uniformity in the prevalence of certain classes of disease and injuries. For example: the epileptics were 3 in 1,000 Americans, 4 in 1,000 English, 4 in 1,000 Irish, and 4 in 1,000 Europeans. Gonorrhœa and syphilis are found in almost the same proportion in each; and the rejections for spinal curvature, old injuries, defective vision, and ulcers, are remarkably uniform in results. While the Germans and other Europeans seem to have had more unsound and broken constitutions in their numbers, the Americans present an excess of rejections as too slender, and not sufficiently robust; a result doubtless due to the fact that, as a general rule, they were young men who had not arrived at the full development of their physical strength.

Causes of rejection.	Americans.	Germans.	English.	Irish.	Europeans.	Total.
Not robust, too slender .....	138	95	96	61	77	467
Unsound and broken-down constitutions .....	74	91	63	68	131	427
General unfitness.....	28	27	23	32	40	150
Imbecility, unsound mind.....	9	11	5	11	6	42
Epilepsy .....	3	-----	4	4	4	15
Intemperance and bad habits .....	86	24	113	102	28	353
Hernia, and lax abdominal rings .....	53	97	53	48	92	343
Varicose veins and varicocele.....	163	177	184	183	170	877
Hemorrhoids .....	36	25	35	34	9	139
Syphilis .....	16	24	30	25	28	123
Gonorrhœa .....	12	10	12	11	9	54
Loss of teeth.....	13	6	7	12	5	43
Unequal length of limbs .....	6	12	16	9	9	52
General malformation.....	13	37	13	20	27	110
Malformation of fingers, toes, and feet.....	24	48	24	34	29	159
Malformed and contracted chest.....	87	39	46	36	52	260
Spinal curvature .....	17	20	19	16	26	98
Old injuries, fractures, &c.....	60	52	47	44	60	263
Cicatrices .....	11	10	18	22	17	78
Tumors .....	3	6	7	14	4	34
Disease of bones and joints.....	10	18	26	19	11	84
"    of skin.....	22	35	23	49	20	149

TABLE—Continued.

Causes of rejection.	Americans.	Germans.	English.	Irish.	Europeans.	Total.
Disease of heart .....	5	7	6	3	12	33
“ testis and tunica vaginalis .....	14	18	22	25	31	110
“ anus .....	1	3	2	6	3	15
“ eyes .....	30	28	27	39	20	144
“ ears .....	1	1	—	1	—	3
“ glands .....	8	7	2	8	—	25
“ chest and throat .....	5	8	11	7	10	41
“ abdomen .....	8	4	5	4	3	24
Defective hearing .....	4	—	6	4	—	14
“ vision .....	11	13	12	10	14	60
Ulcers .....	22	29	22	18	37	128
Goitre .....	—	16	2	2	7	27
Ascites and anasarca .....	—	—	2	7	4	13
Obesity .....	1	—	3	1	3	8
Letter D .....	5	2	14	11	2	34
Defective speech, stammering .....	1	—	—	—	—	1
Total .....	1,000	1,000	1,000	1,000	1,000	5,000

The returns also afford the necessary data for determining the different trades and occupations of the individuals presented to the medical officers for examination, as well as the specific disability in each case.

The following table gives the occupation of 8,000 persons, with the numbers respectively passed and rejected, arranged in classes of one thousand each:

Occupations.	Passed.	Rejected.	Total.
Laborers .....	567	433	1,000
Farmers .....	573	427	1,000
Bakers, saddlers, and weavers .....	587	413	1,000
Clerks, students, and teachers .....	580	420	1,000
Blacksmiths, machinists, and workers in metals .....	632	368	1,000
Shoemakers .....	633	367	1,000
Tailors .....	641	359	1,000
Carpenters and workers in wood .....	672	328	1,000
Total .....	4,885	3,115	8,000

Although desirous of avoiding the error of going too much into the details of these statistics, it is believed that a statement of the specific causes of rejection in each of the above classes will be both useful and interesting. The subjoined table has, therefore, been compiled from the original monthly returns:



Causes of rejection.	Laborers.	Farmers.	Bakers, saddlers, and weavers.	Clerks, students, and teachers.	Blacksmiths, and workers in metals.	Shoemakers.	Tailors.	Carpenters and workers in wood.
Not robust .....	51	27	50	43	28	64	61	35
Unsound constitution.....	27	38	43	40	31	29	33	27
Imbecility.....	29	40	8	20	16	16	6	14
Intemperance.....	49	35	29	33	45	53	57	32
Lax abdominal rings.....	21	9	3	3	1	3	2	2
Hernia.....	17	14	23	10	16	14	14	19
Varicose veins .....	68	69	78	64	83	38	37	69
Hemorrhoids .....	18	10	8	27	9	19	9	9
Syphilis and gonorrhœa .....	6	20	6	17	9	8	14	11
Loss of teeth .....	4	5	7	7	3	3	2	4
Malformations, general.....	25	20	39	21	22	25	16	18
Malformations of chest.....	16	32	19	41	17	30	19	13
Injuries, fractures, &c.....	25	29	26	13	24	19	22	29
Tumors .....	5	6	3	2	3	2	5	3
Diseases of bones.....	4	9	6	9	12	6	4	4
" skin.....	12	12	16	15	12	9	12	5
" chest.....	2	6	2	6	2	3	3	5
" heart.....	1	-----	5	5	2	4	3	-----
" testis.....	6	10	8	9	7	7	15	8
" eyes.....	22	17	11	14	8	7	9	3
" ears.....	-----	-----	-----	1	1	-----	-----	1
" glands.....	5	1	2	2	-----	2	-----	-----
Defective hearing .....	1	-----	1	2	1	2	-----	2
" vision.....	2	7	8	9	3	2	5	1
Ulcerations.....	11	4	9	5	9	1	6	11
Disease of abdomen.....	1	4	1	2	1	1	1	2
Letter D .....	5	3	2	-----	3	-----	4	1
Total .....	433	427	413	420	368	367	359	328

The occupations and professions from which recruits are obtained, are presented in detail in the following list, which is arranged in three distinct classes—those born in the United States, in Great Britain, and in continental Europe:

*Occupations and professions of recruits.*

Occupations.	Americans.	British.	Europeans.	Occupations.	Americans.	British.	Europeans.
Butchers .....	5	9	35	Musicians .....	21	13	79
Farmers .....	187	90	84	Carpenters .....	47	16	50
Soldiers .....	121	73	129	Blacksmiths .....	54	16	39
Bakers .....	3	19	46	Shoemakers .....	34	56	30
Cabinet makers .....	3	1	11	Tailors.....	21	27	25
Laborers .....	186	439	131	Masons .....	20	8	16
Clerks .....	59	59	77	Brewers .....	-----	-----	17

## STATISTICS OF THE RECRUITING SERVICE.

## OCCUPATIONS, &amp;c.—Continued.

Occupations.	Americans.	British.	Europeans.	Occupations.	Americans.	British.	Europeans.
Sailors.....	22	5	14	Lawyers.....	1	-----	1
Weavers.....	1	13	14	Clergymen.....	-----	-----	1
Bookbinders.....	-----	-----	12	Coopers.....	10	4	11
Saddlers.....	11	3	12	Machinists.....	11	10	6
Painters.....	23	7	9	Students and teachers.....	2	2	10
Millers.....	8	2	9	Servants.....	7	40	12
Stonecutters.....	4	4	11	Mechanics of various kinds.....	121	80	89
Printers.....	15	4	7				
Merchants.....	-----	-----	8	Total.....	1,000	1,000	1,000
Physicians.....	3	-----	5				

The regulations for the recruiting service prescribe that no person shall be enlisted who is under 18 or over 35 years of age. The period of life in which a recruit can be enlisted is thus kept within very narrow limits, and no great disparity in the ages of persons, from different countries, brought to the examining surgeons, is to be expected. As, however, one reason for the number of Americans rejected as “too slender” was stated to be their youth, as compared with recruits from foreign countries, a more minute inquiry into this branch of the subject was instituted. The result is as follows:

Nativity.	No. of recruits.	Total No. of years.	Average age.
United States.....	200	4,802	24.01
England and Scotland.....	200	4,862	24.31
Ireland.....	200	4,884	24.42
Germany.....	200	5,130	25.65
Other countries in Europe....	200	5,153	25.76

Inquiry has also been made in regard to the comparative physical development of Americans and Europeans. The results, from data taken indiscriminately from the records of the Surgeon General's office, are exhibited in the following table:

Height.	AMERICANS.		ENGLISH.		EUROPEANS.	
	No. of soldiers.	Mean weight.	No. of soldiers.	Mean weight.	No. of soldiers.	Mean weight.
		<i>Pounds.</i>		<i>Pounds.</i>		<i>Pounds.</i>
5 feet 5 inches.....	141	134.02	535	134.74	215	131.57
5 “ 6 “.....	260	137.60	721	138.41	249	138.02
5 “ 7 “.....	309	141.31	733	145.13	241	143.36
5 “ 8 “.....	262	145.40	614	146.18	175	145.23
5 “ 9 “.....	220	148.06	411	150.09	116	152.82
5 “ 10 “.....	149	154.36	222	152.87	76	156.71
5 “ 11 “.....	112	160.82	116	158.60	24	159.79
6 “ and over.....	84	164.80	87	161.30	17	166.80
Totals and averages..	1,537	148.29	3,439	148.41	1,113	149.66

A more particular physical description of American recruits will be found in the following table, which exhibits the mean height, in feet and decimals, of 1,800 men, taken as they were entered upon the lists of recruits filed in the Adjutant General's office. The results are given for one hundred men from each State. No recruit under five feet five inches received.

*Physical description of American recruits.*

State.	Mean height.	Six feet and over.	Greatest height.	EYES.					HAIR.				COMPLEXION.	
				Blue.	Grey.	Hazel.	Black.	Brown.	Dark B.	Light B.	Red.	Black.	Fair.	Dark.
	<i>Feet.</i>		<i>Fl. in.</i>											
Indiana .....	5.7604	18	6 4 $\frac{1}{4}$	40	28	21	11	28	17	24	13	18	73	27
Kentucky .....	5.7729	18	6 3 $\frac{3}{4}$	38	19	22	21	22	18	28	8	24	69	31
Ohio .....	5.7537	15	6 3 $\frac{1}{2}$	44	28	9	19	33	15	19	14	19	67	33
Tennessee .....	5.7779	18	6 3	42	28	19	11	15	36	27	11	11	74	26
Maine .....	5.7314	11	6 2	61	18	18	3	43	28	12	9	8	75	25
Vermont and N. Hampshire ..	5.6951	6	6 1	56	29	13	2	54	14	20	4	5	79	21
Massachusetts and Connecticut	5.6821	5	6 3	49	24	17	10	40	14	19	12	15	72	28
North Carolina .....	5.7814	24	6 3 $\frac{3}{4}$	48	22	21	9	8	26	27	20	19	77	23
Georgia .....	5.8272	30	6 6 $\frac{1}{2}$	52	22	21	5	19	30	24	18	9	69	31
South Carolina .....	5.7729	15	6 4 $\frac{1}{2}$	48	23	22	7	11	22	32	23	12	77	23
Alabama .....	5.7647	17	6 4	31	37	21	11	6	30	30	13	21	71	29
Virginia .....	5.7488	15	6 2	41	24	22	13	32	21	19	9	19	71	29
New York .....	5.6505	4	6 1 $\frac{1}{2}$	31	42	18	9	59	8	16	6	11	68	32
Pennsylvania .....	5.6756	5	6 1	32	33	28	7	54	9	16	8	13	65	35
New Jersey and Delaware ...	5.6509	6	6 1	30	41	24	5	27	27	26	8	12	67	33
Maryland .....	5.7130	9	6 2	35	25	32	8	23	18	20	13	16	70	30
Illinois .....	5.7696	17	6 3	37	35	20	8	38	19	17	15	11	71	29
Missouri .....	5.7162	8	6 1 $\frac{1}{2}$	47	15	28	10	35	23	21	9	12	80	20

Having shown to some extent the sources from which the army of the United States is recruited, and given the general characteristics of the several classes offering for enlistment, it is proposed, in conclusion, to show what becomes of the recruit, so far as the military service is concerned. For this purpose reference is made to the following table:

Nationality.	Expiration of service.	By order A. G. O.	By court-martial.	Disability.	Died.	Killed accidentally.	Killed in battle and died from wounds.	Deserted.	Total.
Americans .....	549	171	63	260	193	15	57	692	2,000
English .....	618	155	54	229	237	23	49	635	2,000
Irish .....	664	141	53	259	226	27	62	568	2,000
Germans .....	719	149	20	306	273	37	62	434	2,000
Total .....	2,550	616	190	1,054	909	102	230	2,329	8,000





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## APPENDIX.

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## APPENDIX.

No ATTEMPT has been made to incorporate in this report the medical statistics of the Florida war. The exceedingly arduous nature of the campaigns in that peninsula, the necessity of pursuing an unseen enemy in trackless forests, over low marshy grounds, and through wet hammocks, so extensive as to make it difficult to find dry ground whereon to encamp, proved fruitful sources of those fearful scourges of armies—fever, diarrhœa, and dysentery. To these sufficiently exciting causes of disease, must be added the (at times) depressed *morale* of the army (both officers and men), arising from the frequent failure of their efforts to overtake or meet the enemy.

The medical statistics of the army in Florida, during the war, would, by no means, afford a proper basis by which to judge of the healthiness or unhealthiness of that territory; nor would their collation do much more than prove that the troops suffered, in an extraordinary degree, from intermittent and remittent fevers, and from diarrhœa and dysentery.

The prominent medical feature of that war was the introduction into the army of the practice of giving *quinine in large doses*, during the intermission of intermittent, and remission of remittent fever; and, also, of the exhibition of that remedy in the febrile stage of those diseases.

Without attempting to decide upon the *originality* of this practice, in *any of its phases*, or to determine to whom, among the medical officers, is due the merit of introducing it into the army, (for on this point the official records are silent,) it may with truth be said, that to the medical staff of the army belongs the credit of having demonstrated, on an extensive scale, its safety and efficacy, and of having thereby largely contributed to revolutionize the treatment of fever in this country.

It has not been practicable to ascertain from the official records the *precise time* of the introduction into the army of the practice of giving quinine in large doses. The earliest reports of sick, in which that practice is alluded to, refer to the treatment as having been adopted some time previously. The reports of Assistant Surgeon (now Surgeon) J. J. B. Wright, for the quarter ending June 30, 1841, and of Assistant Surgeon (now Surgeon) Charles McCormick, for the quarter ending September 30, 1841, are the first which are accompanied with any special or detailed account of this treatment. The remarks of Surgeon Wright are embodied in the report of that officer, (herewith submitted,) in reply to the Surgeon General's circular of August 14, 1843. The special report of Assistant Surgeon McCormick is as follows:

“FORT R. GAMBLE, M. F., *October 11, 1841.*

“SIR: Fever has been the prevailing disease during this quarter; and next, in frequency, have been diseases of the organs connected with the digestive function. Of one hundred and sixty-seven cases reported, sixteen were of the remittent, one hundred and nineteen of the quotidian, and thirty-two of the tertian type. From this, it appears that, in one hundred and thirty-five of the cases, there were daily paroxysms of fever; and I think the strongest peculiarity of character the cases have presented this season, has been the strong tendency they have had to run into and assume the remittent type. In fact, in many of the cases, it has been extremely difficult to draw a distinct and plain line of demarcation—to say where one ended, and the other commenced. Some two or three have assumed the form known as ‘congestive fever.’

“The three military stations embraced in this report appear to have been judiciously located, and are probably as healthy as could have been selected in the neighborhood, with due regard to their military importance. The only causes which operate in producing disease at these stations (excepting intemperance alone) may be considered as general to the territory—such as malarial exhalations, atmospheric vicissitude, and the exposure to which troops are subject day and night.

“In regard to the treatment of the fevers arising from these causes, my opinion has undergone a very important change within the last two years; and every day’s experience, during this period, has tended, in the most ample and satisfactory manner, to convince me that this change has not only been important, but that the practice founded upon it has been judicious and successful in the highest degree. In relation to the intermittent forms of fever, the change was more in the mode of administering, and in the quantities of the remedies given, than in the remedial agents themselves. Some two years since, I was so unsuccessful in arresting the paroxysms of intermittent fever with the sulphate of quinine, given in two-grain doses every hour, (although, during the apyrexia, as much as twelve, eighteen, or twenty-four grains had been given,) that I laid it by in despair, and resorted to sedatives and relaxants—such as tartrate of antimony, ipecac, opium, &c. Still, however, I was not satisfied; and the great reputation the Peruvian bark had so long enjoyed created doubts as to the propriety of abandoning its use. Soon, therefore, I determined to give it another trial in larger doses; and, with this view, I commenced three or four hours before the expected paroxysm, and gave from four to six grains every hour, until it produced its peculiar effects upon the brain—ringing and buzzing sounds in the ears, a sense of stricture across the forehead, and temporary or transient deafness—effects invariably produced in every case where three or four such doses had been given. From this time forward I was constantly successful; nor do I remember a case in which it failed, when the peculiar effects it displays on the nervous system were produced. Finding, then, that the enlarged doses had such happy effects, I was induced, in many cases where the apyrexia was short, to give it in single doses of from ten to fifteen or twenty grains, according to the violence of the disease. Here, then, I saw cases of intermittent fever that could not be arrested by fifteen or twenty grains of sulphate of quinine, (in fact, as before stated, it daily failed,) given in small and divided doses, yielding immediately to the same quantity given in large doses in a much shorter interval. Again: the small doses seemed, when frequently repeated, in many cases to prove stimulating, flushing the face, producing mental excitement and headache. Scarcely one of the patients to whom small doses had been given complained of the ringing and buzzing in the ears, and deafness, which were constantly complained of by those to whom large doses had been given. There would, then, appear to be great difference in the effects produced by small and frequently repeated doses of the sulphate of quinine, and those impressions made by large and full doses. The action of opium furnishes what I consider as a close analogy, acting in small and frequently repeated doses as a stimulant, and in large doses as a sedative. The analogy holds further: I do not believe the severest pain can modify more strongly the action of opium, and thus render doses beneficial, that would, under ordinary con-



ditions of the system, prove fatal, than that the violence of the fever can, and does, modify the action of the sulphate of quinine; and thus, during severe and highly dangerous fever, render safe, beneficial, and sanative, a quantity that, in ordinary health, could not be tolerated. I have given upwards of three hundred grains in less than twenty-four hours, in an extreme case of congestive fever, that was ushered in by total insensibility, speechlessness, inability to swallow, the power of deglutition being entirely lost, cold extremities and surface, pulse feeble and nearly extinct; in fact, it was not to be felt. Here, the first effort to administer the sulphate of quinine was made to throw fifty grains into the rectum. In this case, the only perceptible effects of the sulphate of quinine (which was repeated after the pulse rose, and the extremities became hot, in twenty-grain doses, every hour, for twelve or thirteen hours) were to throw out upon the surface, generally, a warm, free perspiration, and to reduce the pulse from one hundred and upwards to eighty per minute, and rendering it soft and compressible; and, undoubtedly, by allaying the fever, it enabled the calomel, which had been given every hour with the quinine, in ten-grain doses, to exert its full effect upon the secretions. Free alvine evacuations were procured, and a speedy and complete recovery followed in a few days.

"I am satisfied that the best mode of administering the sulphate of quinine, is to give from ten to fifteen grains as soon as the paroxysm is over. Given thus, before or after the paroxysm, it appears at times to fail; for the paroxysm returns sometimes without, and at others with, a struggle (as the patients have described it to me) between the medicine and the disease. In many of the cases it would appear that the disease conquers, and the paroxysms return: but, on examining the pulse, it will be found more bounding, yet softer, and more easily compressed. Although the paroxysm has thus returned, it is much moderated and changed in its character; and I think, with three exceptions in more than two hundred cases, it has always proved the last paroxysm, the disease having yielded. But I am confident of my ability to prevent such returns by giving fifteen grains of quinine at the end of the paroxysm, and following it by five-grain doses every six or eight hours, until half a drachm is taken in the interval, or even in the twenty-four hours; or by giving, in addition to the fifteen grains at the end of the paroxysm, ten grains or fifteen grains an hour or two before the period for the accession of the next paroxysm. This latter is the plan I have used successfully in the only few cases of quartan ague I have met with. Such I have found to be the most successful mode of using the sulphate of quinine in the treatment of intermittent fevers; and I have never found it to interfere with whatever antiphlogistic measures it has been necessary to use. General and local bleeding should always precede the use of quinine in every case in which they are indicated. I have found this practice constantly to favor the full impression of the quinine.

"In many of the cases of intermittent fever I have observed a regular recurrence of the disease; in some cases every seventh, in others every ninth, fourteenth, twenty-first, and twenty-eighth day. In many of the cases of this kind I have succeeded in breaking up the morbid catenation, and arresting the disease, by anticipating the recurrence of the paroxysms for one or two periods with the sulphate of quinine. In cases of this kind, the premonitory stage is very common; and when this makes its attack, the administration of ten or fifteen grains of the sulphate of quinine has invariably proved successful. In this manner, during the past two summers I have been so fortunate as to free myself from this troublesome complaint.

"As I have said at the commencement of these remarks, about two years since I changed my opinion of the treatment of the remittent forms of fever. At that time the practice I was pursuing was general and local bleeding, as required, free alvine evacuations, the mercurial impression, cold bland drinks, cold affusions, and counter-irritants; and I then thought it the most judicious. The practice, however, rarely succeeded in arresting the disease promptly; and no part of this treatment possessed a quick and certain power to arrest the disease generally—unless, in some few cases, venesection; and that only in the forming stage. Here, then, generally, was the practice I was pursuing in what are termed remittent fevers; and by far the greater portion of, indeed nearly all, the authors whom I had read, and whom I was taught to regard as



standard authorities—condemned in the most unqualified terms the use of the Peruvian bark, and all its preparations, in the treatment of this disease. I gave them implicit belief, and would have deemed it the height of malpractice to have used it, as it only should be used, boldly, in any such case. Notwithstanding all this, reasoning by analogy, an idea that its use might be advantageously extended to the treatment of remittent fevers in all their varieties, forced itself upon my mind. My attention was first roused by the wonderful and almost infallible power I had myself witnessed that this potent remedy possessed over every variety of intermittent fever. Again, I reflected that they were the result of the same causes—their anatomical characters, to say the least, very similar; that they had, in very many cases, such a decided tendency to assume the characters of each other; that the differences in the accession, duration, and symptoms of the paroxysms, are in reality but slight. For instance: the diagnosis between them in many cases is very difficult, from the passing of the one into the other; and, in fact, many authors describe them as varieties of the same type; and, finally, that they both yield readily and promptly to the same general treatment, except some few cases of the severer forms of each, in which the best devised practice may fail. Here, then, by name, are two different diseases, according to some authors; according to others, only a variety of the same type of fever, not in reality differing more from each other in the accession, duration, and symptoms of the paroxysms, or in the nature of the intervening periods, than do the varieties of those which are plainly intermittent among themselves, or those which are plainly remittent; there being as great a difference of character among the varieties of the former, and also among the latter, as between the intermittent and remittent.

“From this view of the subject, they appear only as varieties of the same disease, and as such I regard them. But admit it otherwise; all who oppose the use of the preparations of Peruvian bark in the treatment of remittent fever, will say the practice I formerly pursued, as stated above, was judicious. I deem it such now, and only regard the addition to it of the timely and free use of the sulphate of quinine as rendering it almost certain of success in this form of fever. The use of it in remittents is as necessary, as judicious, and as harmless, as it is in the intermittent form. It has been, perhaps, as much from a different view of the action of the sulphate of quinine upon the system, as from regarding the two forms as different fevers, that the great opposition to its use in remittent fever has been made. I will endeavor to give a fair and impartial view of its action, from personal observation in many hundred cases. I regard its action in large doses as sedative; certainly all admit it to be the greatest and most powerful anti-periodic or anti-intermittent known to the profession. I can aver, from long experience, that I have never known it to increase inflammation; and that I have given it freely, under all circumstances, and am fully satisfied, from observation, that it not only has no power to retard the cure of inflammation, but that, in fact, all its tendency is to accelerate it; that it will prevent congestions and inflammations from occurring in fever, by allaying the irritation which excites and causes them. I have given it at all times of the paroxysms with perfect safety, and have never witnessed any alarming or dangerous effects from its administration under any such circumstances. The results of my experience of the effects and properties of the sulphate of quinine may be thus stated: 1st. It is a sedative, possessed of peculiar properties, which may be termed anti-periodic or anti-intermittent. 2d. It has no power to augment inflammation, and may, therefore, be given *under all circumstances*. 3d. Nor has it any power to prevent the cure of inflammation; but, under many circumstances, a direct and positive power to prevent it. 4th. It may be given at any period during the paroxysm:—I prefer the decline, or just after it has subsided. 5th. During the course of fever, it accelerates the absorption of whatever remedies may be introduced into the system, such as mercury: this I can only explain, by saying that it allays the fever, and consequently withdraws the excitement of the organs, which, as long as it continues, must diminish in a great degree, if it does not entirely stop, secretion and absorption. 6th. It will allay more speedily, and more certainly than any other remedy, those troublesome symptoms, nausea and vomiting, so common in the fevers of this country; and by

the same virtue, it will arrest the paroxysms of fever, and thus leave whatever lesion may exist, at the point to which it had arrived when the fever was arrested; and, by thus withdrawing the excitement from the injured organ, will prevent its being hurried beyond this point; and, consequently, they will much more readily yield to remedial agents.

“Such, then, are the properties of the sulphate of quinine; and can any one, regarding them as such, hesitate to administer it in fever, as it is evident that this remedy may safely be employed, even in cases where local inflammations exist; and that, too, without augmenting them?

“In the next place, a view of the nature of fever may, in some measure, enable us to see the *modus operandi* of the sulphate of quinine, and serve to explain its almost specific power in arresting the paroxysms and progress of fever.

“Broussais, in order to explain the power of quinine in arresting intermittent fever, was forced into the absurdity of giving to a stimulant (as he regarded it) the power constantly of subduing gastro-enteritis, of which, he contended, the fever was symptomatic; and such is likely to be the fate of all who contend that all fevers are symptomatic of local *inflammations* of the different organs.

“To endeavor to arrive at the proximate cause of fever solely by examining the bodies, after death, of those who have died of fever, seems about as hopeless as to examine the wreck a violent tornado has left in passing over a section of country, in search of the cause that originated the tornado. We may see and know the effects each has produced, and ever after be able to ascribe these phenomena to the causes producing them; but they reveal to us nothing in relation to the precise condition of the body, or of the atmosphere they themselves have originated in. Dissection alone cannot be trusted to, in seeking the proximate cause of fever. It is, doubtless, of high importance in teaching us what organs are prone to suffer, and thus arouse our efforts to protect and relieve them; but when has dissection detected the difference in the brains of those who have died of hypochondriasis, tetanus, or hysteria? or can it distinguish the brain of high intellectual endowment from that of idiocy? The train of phenomena constituting, and the action of the remedies most successful in arresting the disease, must, doubtless, be of vast assistance in enabling us to arrive at just conclusions; for if they are disregarded, we fail to detect the great and primary link in the train of sequences constituting fever-lesion of the nervous system.

“Those who contend that fever is not symptomatic of local inflammation say, ‘Fever is an essential or primary disease. The first appreciable event in the chain of sequences constituting fever, is functional injury of the nervous system. The only essential or invariable consequence of this affection is functional derangement of the most important organs of the body, but more especially of the brain, the circulating organs and fluids, the alimentary canal and skin. The changes which have been observed to take place in the blood and other animal fluids, are, like the local disorders, secondary, and not primary; they may be the source of the phenomena remarked in the advanced stage of the disease, but they are not the source of the disease itself in the first instance.’ That functional lesion of the nervous system is the first link in the train of phenomena, is generally admitted; and that this universally follows the impression of the remote cause, must also be admitted; in other words, they stand in the relation of cause and effect. The truth, then, is, in my opinion, that the malaria, or other cause of fever, first acts as a *morbid irritant* on the nervous system—sometimes more forcibly on the cerebro-spinal, and at others more so on the ganglionic department, causing a derangement of function therein; the capillary vessels throughout the organs become involved, and congestions and inflammations are excited; and whatever organs have suffered most from the predisposing and exciting causes, will be most violently affected. There is, evidently, great disturbance of the nervous and vascular systems, and they evidently act and react on each other, and thus produce the phenomena of the paroxysms. The inflammatory congestions that occur in the first paroxysm are aggravated and increased by every succeeding one, and, unless arrested by suitable means, will, in a great majority of cases, end in organic lesion of some vital organ, and terminate fatally.



“Moreover, if from the constant and invariable effect of any remedy in arresting disease, any certain conclusions can be drawn, the almost specific power of the sulphate of quinine in subduing the paroxysms of fever must, at least, be regarded as indicating the nervous system as the *fons et origo* of the cause of fever; for it is manifest that the whole power and effect of this potent remedy is exerted upon this system, whether or not the remedy be regarded as a sedative. The excitement and derangement produced in this system by the remote cause, points out its action to be that of a morbid irritant. It cannot consist in inflammation, as quinine possesses no immediate and prompt power to arrest inflammation. Nor can it be, as Dr. Cullen supposed, sedative; for, if it acted thus, it would not constantly produce excitement and derangement.

“This irritated state of the nervous system is the *sine qua non*, the original, fundamental, or proximate cause, to which all the other phenomena of fever are successive. It consequently follows, that if this irritation be allayed, and its return prevented, the phenomena of fever will cease; and such is the fact.

“If the fever has been suffered to continue for any length of time, the different organs may, and in many cases must, be found in various morbid conditions. It must, therefore, be remembered, that removing the cause can only prevent further injury; and that whatever lesions exist up to the time of its removal, must remain and require proper treatment to subdue them. It is like plucking a thorn from a wound; it does not immediately repair the injury it inflicted, but, on being withdrawn, ceases to act as an irritant, and leaves the part in a condition most favorable to recovery.

“Regarding this, then, as the true pathology of fever, the treatment may be considered to consist mainly in the following indications—viz:

“To *arrest* the fever at its outset, or as soon thereafter as practicable; to obviate the tendency to inflammatory congestions, especially of the liver, stomach, intestines, and brain, by moderating the febrile reaction; and, finally, to remove the local disorders and complications that may have occurred. The remedy on which I place the greatest reliance to arrest the progress of fever is the sulphate of quinine. To accomplish this object, it should be given boldly, in large doses. General and local bleeding, cathartics (such as the mercurial preparations, castor-oil, sulphate of magnesia, and calcined magnesia) cold drinks, and ablutions, are the means adopted to allay the febrile reaction; and to obviate the tendency to inflammatory congestions, and to combat the local disorders, topical bleeding, counter-irritants, and alteratives.

“Such is a general outline of the practice I have pursued for nearly two years past, in the treatment of the fevers I have met with in Florida; and I can safely say that it has proved successful in every case which has been under my immediate charge, in which it was adopted—amounting to several hundreds. I have, at times, prescribed for many patients without having seen them during their illness; and even in every case of this description—under, of course, every disadvantage—it has been as successful, with one solitary exception. This was the case of Private Campbell, whose death is recorded in this report. He was on duty with a detachment stationed at Auseilla ferry, near old Fort Roger Jones; I was on my way to the place, to have him removed to the hospital at Fort R. Gamble, when his death was reported to me. He died very suddenly; and from the information I received, I believe his death resulted from the fever known as ‘congestive fever,’ which I have seen in that locality. All the other cases occurring at that station, that came under my immediate charge, yielded readily to the treatment.

“A few remarks in regard to the mode of using the sulphate of quinine may be necessary. In all cases, strict attention should be given to the state of the vascular system; for, as has been before remarked, general and local bleeding should always precede the exhibition of the sulphate of quinine, in every case in which they may be indicated, inasmuch as this practice will be found constantly to favor the action of the quinine, probably by diminishing excitement and moderating the reaction of the vascular or the nervous system. With the same view, either before or soon after its administration, an active mercurial cathartic, to procure free alvine evacuations, should be given; to be followed, if necessary, by a combination of sulphate of magnesia,



and calcined magnesia, or castor-oil. I have concluded, from experience, that the best time for the sulphate of quinine to be given is immediately at the end of, or as a paroxysm subsides, or as near this time as possible. Nature herself would seem to indicate this, for at this time there is generally a calm—a pause in the disease. There is no general rule to determine the quantity of the sulphate of quinine that may be required. In ordinary cases, I have found from fifteen to twenty-five and thirty grains sufficient. In the severer forms, a larger quantity becomes necessary; and, in dangerous cases (such as I cited when endeavoring to show how the severity of fever modified its action), from ten to twenty grains may be given every hour in combination with ten grains of calomel. Here the mercurial impression is an agent whose auxiliary power we require.

“For those cases commonly called ‘congestive fevers,’ which I had met with previously to having adopted this practice, there seemed to be no remedies on which any reliance could be placed. It has been in the severe and extreme cases of this formidable malady that I have seen this remedy (sulphate of quinine) exhibit, to the greatest advantage, the Herculean and almost incredible power it possesses over the cause originating the disease, to which it would almost seem to act as an *antidote*. In cases of this nature, it must be given fearlessly, in large and frequently repeated doses, and persevered in until its effects are manifest.

“One of the most annoying and troublesome symptoms in the fevers of this section of country is the irritability of stomach, accompanied with incessant nausea and vomiting. Hitherto, in a large majority of severe cases, I have had this difficulty to contend with; and, in many instances, it has resisted every remedy. Under the present mode of treatment, I have had no difficulty in relieving and preventing this symptom.

“It is said, calomel adds efficacy to every remedy with which it is combined; for instance, it renders squills more diuretic, &c. The same remark applies to the sulphate of quinine, in relation to the mercurial preparations. What a happy combination, then, especially in cases of fever, these two remedies must prove, each possessing such remarkable powers. I have seen a single dose of twenty grains of quinine enable the mercurial preparations to produce their full impression, even to ptyalism, in patients whose cases had resisted every effort that was made to excite it for many days. In these cases, the system labored under such constant and continued fever during the whole time it resisted the mercurial impression; the different organs were in such an irritated excitement, that both secretion and absorption were nearly, if not entirely, suspended. The quinine, by subduing the fever, allays this excitement; on the removal of which the functions are resumed, the remedies are taken up, and ptyalism is produced; or, in cases where the mercurials have not been pushed so far, the secretions are restored to a healthy standard, without this disagreeable and harassing accompaniment.

“Nearly every case of dysentery I have met with this season has been unusually severe and dangerous. The immediate and exciting cause of the two cases reported as fatal, I ascribed to the excessive use of ardent spirits and subsequent exposure. In the case of Private Byrnes, I understood from an officer that, immediately on leaving the general hospital at Cedar Keys, he got excessively drunk two or three times, and immediately afterwards was attacked with dysentery.

“In some cases, general, and, in nearly all, local bleeding, blisters and calomel, with the free use of opium, gum-water, and mild laxatives, was the general practice I followed; and, in cases where complicated with intermittent, quinine was highly useful. In the case of Private Hackett, during the time he labored under dysentery, intermittent fever supervened; it yielded to a few grains of quinine, but the original disease continued, and did not yield to any remedy. In this case, slight accidental salivation occurred. In the case of Lieutenant Johns, who had a severe and dangerous attack of this malady, the dysenteric discharges, during several days of his disease, recurred at regular periods—usually about 10 o’clock in the morning, and lasted until late in the night. During the time they thus lasted, they were as distressing and harassing as they had been at any period of his disease; and, during the remission of the dis-

charges, he was easy, and rested well. With a view to arrest the recurrence of these discharges, I anticipated a paroxysm with a large and full dose of sulph: morphiæ, but it had not the desired effect; I therefore anticipated the next paroxysm with twelve grains of quinine. The disease yielded; convalescence commenced; and, since then, he has returned to duty.

"I have the honor to be, very respectfully, your obedient servant,

"CHARLES McCORMICK,

"T. LAWSON, M. D.,

"Assistant Surgeon U. S. Army.

"Surgeon General U. S. Army, Washington City, D. C."

The practice of using quinine in such large doses, and during the stage of febrile excitement, having excited much attention, and the propriety of such treatment having been questioned, the Surgeon General issued the following circular to the medical officers of the army:

"SURGEON GENERAL'S OFFICE, August 14, 1843.

"SIR: As the propriety of the administration of quinine in very large doses has become a mooted question throughout the medical world, and as various members of the medical corps of the army have had more or less experience in this particular, you are hereby directed to furnish replies to the following interrogatories:

"1. What is the extent of your experience in this respect?

"2. Was it always the *sulphate* of quinine that you have prescribed? If so, was it pure?

"3. From what source has your quinine been obtained?

"4. In how large doses have you administered it, both as regards the *extreme* and the *average* quantity?

"5. State the specific diseases in which you have employed it, with all the necessary details, and especially as regards the tonic or atonic state of the system; and whether injurious effects, or at least unpleasant symptoms, did not less frequently supervene in the *adynamic* state than when the powers of life were in an exalted condition?

"6. Give your opinion as to the *modus operandi* of this therapeutic agent—whether, for instance, you regard it as a tonic, a sedative, or a stimulant?

"7. Since the practical introduction of quinine in large doses, the statistics of this Bureau exhibit a much higher ratio of diseases of the bowels—as, for instance, diarrhœa and dysentery—and also a much higher average of mortality from the same diseases. It remains, therefore, to be determined how far this result is due to this cause, or to the operation of other agents.

"8. What have been your observation and experience in regard to the influence of the climate of Florida, the acute diseases incident thereto, or the use of quinine in inducing acute and chronic affections of the liver and spleen?

"9. State whatever else you may deem appropriate to the subject.

"This inquiry is instituted at the instance of the Army Medical Board lately in session at New York, upon the suggestion of one or more distinguished practitioners of medicine in private life; and it is desirable that the information asked for may be furnished as early as practicable.

"It is thought proper to inform you, also, that, should any important facts, particularly physiological and pathological facts, in connexion with these subjects, be communicated, they will be given to the public."

Reports, in reply to that circular, were received from fifty-seven medical officers; and, although extracts from several have appeared in different medical journals, and the subject has, at this time, lost much of its interest, it has been deemed proper to submit a few of them in connexion with this report, as forming part of the medical history of the army.

The selection of the reports which follow has been governed by the extent of the personal experience of their authors in the use of "quinine in large doses;" though the necessity for confining this work within certain limits has necessarily made the selection somewhat arbitrary.

The reports are presented in the order of the rank of their respective authors.



## REPORTS.

REPORT OF SURGEON BENJAMIN F. HARNEY.

Received December 5th, 1843.]

Agreeably to a circular from the Surgeon General's office, of August 14th, 1843, I have the honor to state that my experience in the use of the sulphate of quinia in any considerable quantities commenced with the year 1838. I have only to speak of the sulphate, having had little to do with the other forms of quinia.

So far as I have been enabled to learn, that which I have used has been the pure sulphate. If it has been adulterated, it was not to a sufficient degree to materially affect its therapeutical properties. In public practice, I have been supplied from New York; in private practice, I have supplied myself from whatever depots I could obtain the genuine article. I have used it in all quantities, in almost every variety of the diseases of our climate, and in all conditions of the system. In ordinary cases, I have prescribed it in doses of from grs. x to grs. xx. In extreme cases (congestive fever), I have given *sixty* grains.

The diseases in which I have principally employed this powerful agent have been intermittent, remittent, congestive, and typhoid fevers, affections of the liver and spleen, acute and chronic rheumatism, gastro-enteritis, colitis, and neuralgia.

My experience and observation warrant me in speaking in most decided terms of the efficacy and beneficial influence of quinia in what are usually termed large doses—*ex. gr.*: grs. xv or grs. xx. So far from producing “injurious effects,” or “unpleasant symptoms,” its use by me has invariably been followed by the subsidence of febrile excitement, the arrest of disease, and the establishment of tonic vital action. If unpleasant effects have ever followed my administration of it, it was in my early acquaintance with this substance, when *four* or *five* grains were considered a maximum dose. Indeed, it would be for me an exceedingly difficult matter to refer to any case in which other effects were experienced than those I had anticipated and desired. In the treatment of our common fevers, it is a matter of daily remark, that where *four* or *five* grains, given at intervals of three hours, will add to the violence of the disease; increase its exacerbation; in short, add fuel to the flame; *fifteen* or *twenty* grains, administered with like intervals, will be attended by the most pleasing results.

In the administration of it, I prefer the adynamic to the hyperdynamic state; although I do not hesitate to administer it at all periods of disease, if risk is incurred by delay; and I express this preference, not because of unpleasant consequences resulting from it when thus administered, but rather for the reason that a more decided effect is produced on the system in the former state than in the latter; and here it shows itself analogous to other remedials.

Diarrhœa and dysentery have never, to my knowledge, resulted as sequelæ to the use of quinia. On the contrary, there is no better remedy for these same diseases, when used in combination with calomel.

Quinia, like other remedial agents, produces its effects through the medium of the nervous system. It seems to expend its energies more especially upon those viscera connected with the portal circle, relieving their congestion and engorgement. Its effects depend in a great degree upon the quantity given at a dose. In small doses, and frequently repeated, there can be no doubt of its stimulant properties. On the contrary, given in full doses, it has a decided sedative and tonic effect, reducing the temperature of the skin, and inducing perspiration. In that ataxic condition of the system so frequently observed in convalescence from fever, where there is irregularity, weakness, and frequency of the pulse, irregularity of nutritive action, irregu-



larity in the distribution of animal heat, irregularity in the functions of the alimentary canal; in short, where there is derangement of all the animal functions, nothing will act more promptly and energetically in restoring the system to a tonic condition than quinia in *full* doses.

It is a powerful adjuvant of the mercurials and other remedial agents in preventing and subduing inflammation; effecting this by the relief it affords to congestions and obstructions of the portal circle, as well as by its sedative properties, and by the equalizing effect it has upon all the nutritive functions. By its sedative properties, it will (when given so as to disguise the taste) speedily allay nausea and vomiting.

Its anti-periodic properties are too well known to need mention in this place. It is sufficient to say that most diseases of a periodical character immediately yield to its *free* administration.

It can be used with all confidence of success in enlargements of the liver and spleen. It does this by the anti-congestive effect it has upon these viscera.

REPORT OF SURGEON RICHARD S. SATTERLEE.

FORT ADAMS, R. I., *August 23, 1843.*

SIR: I yesterday received your circular of the 14th instant, and proceed to answer the interrogatories.

1st. I have administered quinine in intermittent fever, at Green Bay, Wisconsin, and at Plattsburg, New York, in a few cases; but my experience has been chiefly in Florida and the Cherokee nation, from the fall of 1837 to the fall of 1838, and from the fall of 1840 to the spring of 1842, in which time I treated a large number of cases of intermittent and remittent, and a few of congestive fever.

2d. It was always the sulphate of quinine that I prescribed; and, from its effects, I should think it quite pure.

3d. My quinine was obtained from the army purveyor at New York.

4th. I have administered quinine in almost all doses, from one to thirty grains, but chiefly in sixteen-grain doses.

5th. I have employed quinine in congestive fever, in a few instances; and quite extensively in intermittent and remittent fevers, between the paroxysms, or in an atonic state of the system, and never in the tonic state, and have never known any permanent ill effects from it. It sometimes produced temporary pain and giddiness in the head and ringing in the ears, which symptoms I have often known to occur whether the medicine was given in small or large doses. After a few trials with small doses (*viz*: one to five grains) and large (*viz*: from ten to twenty), in intermittent and remittent fevers, I was convinced that the medicine in ordinary cases has a happier effect when given in one dose of about sixteen grains, so as to bring the system at once under its influence; which effect, I am convinced, must be produced, in order to break up the chain of the disease.

In congestive fever, my experience has been limited to a very few cases, which occurred at Pilatka, Florida, in the summer of 1841. I did not give quinine until the feet and legs became cold, the skin clammy, and the mind wandering, (and in two cases the skin was covered with petechiæ,) when, at the instance of Dr. B. F. Harney, the then medical director of the army of Florida, I was induced to give it in large and repeated doses. Thirty grains, combined with ten grains of calomel and two of opium, were given every four hours, until two hundred and seventy grains were given; iced mint-juleps were also given at the same time without limit, and warm applications to feet and legs, when I had the satisfaction (in all cases treated in this way) to see the skin become warm; the pulse, from extreme and laborious depression, become active and strong; the mind composed, and quiet sleep induced. The bowels were acted on by the calomel, and the discharges were bilious, when the quinine and other stimu-

lants were discontinued, and a generous diet substituted. The patients, in about twelve days, were so far recovered as to walk to the steamer, in which they were sent to the north.

6th. With respect to the mode of operation of quinine, I am of opinion that it is a stimulant, and that it possesses a peculiar effect upon the diseases of malarial origin—breaking up the paroxysms. Other stimulants do this, but with much less certainty, and, doubtless, by their stimulating effect; the pulse and temperature of the skin are also accelerated; both proving that its effect, although peculiar, is yet stimulating. I have, in some instances, given quinine in small doses, with a view to get from it a tonic effect, in which I have never succeeded; and have, therefore, come to the conclusion that it is not a tonic. That it has also a quieting effect on the nervous system, I am convinced.

7th. I have not the least hesitation in saying that the constant and long exposure of the soldiers of our army in Florida to the influence of malaria, and their suffering from fevers both remittent and intermittent, was the cause of the great mortality, as well as the great number of cases of dysentery and diarrhœa that occurred there, and by no means the use of quinine; on the contrary, I have often seen intermittent and chronic dysentery, both in the same case, at the same time checked by that remedy. This was, however, not always the case; for in many instances the poor fellows suffered from intermittent and dysentery alternately, until they were removed out of the malarial district, (which always had a favorable effect,) or death closed the scene. And I would add, that in all the post mortems, where death was the result of diseases of the bowels, the large intestines were extensively diseased, and the small rarely at all; and when at all, slightly inflamed.

8th. I saw but very few instances of enlarged or indurated liver or spleen in Florida; and I do not now recollect a single post mortem in which these organs were not found in a pretty healthy state.

9th. I have watched the effects of quinine with no little anxiety in a great number of cases of remittent and intermittent fever; and I consider it, properly administered, the only remedy to be relied on in these cases. Of course, the stomach and bowels must first be cleansed, and any local inflammation overcome; when I administer the quinine any time after the close of the hot stage, giving at least six hours for the medicine to affect the system; and when given in a dose of sixteen grains at one time, I have almost never known it fail to break up the disease without the recurrence of another paroxysm; but if six hours are not allowed for the action of the remedy, it frequently will not prevent the next, but almost always the next paroxysm but one; but an equal quantity given in small doses is much less likely to do so.

I have often given quinine in combination with Dover's powder, and sometimes with calomel; but this was when the disease was coupled with dysentery or diarrhœa, and the latter without reference at all to the effects of the quinine. The dose above mentioned (viz: sixteen grains) I find sufficient to overcome the disease; but I have never seen any permanent ill effects on the system occur from much larger doses.

The above is respectfully submitted, in obedience to your circular, by your most obedient servant,

R. S. SATTERLEE, *Surgeon U. S. Army.*

Dr. THOMAS LAWSON,

*Surgeon General U. S. Army, Washington, D. C.*

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REPORT OF SURGEON ROBERT C. WOOD.

BUFFALO BARRACKS, N. Y., *August 25, 1843.*

SIR: I have just received a "circular" from your office, in reference to the administration of quinine in large doses, and hasten to reply to your several queries.



1st. I have prescribed quinine for sixteen or seventeen years on the Upper Mississippi, in Florida, and in this section of country, in commands varying from two hundred to five hundred men.

2d. I have used the sulphate.

3d. It has generally been supplied by the medical purveyor at New York, and believed to be pure.

4th. I have given 25 grs. in 12 hours, in 5 grs. doses, at intervals of two or three hours, but generally in doses of 2 or 3 grs. every three hours.

5th. I have administered quinine in fevers of a remittent and intermittent type, in typhus, in typhus icterodes, in eruptive fevers, in diseases of the serous exhalant vessels, in diseases of an atonic state where no glandular obstruction existed. In the intermittents of the Upper Mississippi it exercises a perfect control, much more so than in fevers of a similar character at the south. In the adynamic state it is decidedly indicated, and less injurious effects would ensue from its free use than when the vital powers are in an exalted condition. In many of the diseases connected with the digestive system it would be contra-indicated, as in dysentery, enteritis, gastritis, hepatitis, &c.; also in diseases of the respiratory system, as in bronchitis, laryngitis, pneumonia, &c.

6th. I consider the operation of the sulphate of quinine as tonic.

7th. I have been always opposed to the administration of quinine in very large doses, and have no doubt that dysentery and diarrhœa have been aggravated by the excessive use of this remedy.

8th. In relation to my observation and experience in regard to the influence of the climate of Florida, the acute diseases incident thereto, or the use of quinine in inducing acute and chronic affections of the liver and spleen:

During a service of nearly three years in Florida, fevers of a remittent and intermittent type, with dysentery and diarrhœa, were the prevalent diseases. In the consolidated quarterly report embracing the months of July, August, and September, 1839, selected as exhibiting a large number of sick, (which report was prepared from the monthly reports of all the medical officers then serving in Florida,) the following diseases are reported as the most prevalent: intermittents 573, remittents 149, dysentery 191, diarrhœa 175, rheumatism 77, catarrh 79. The whole number taken sick during the quarter was 1,918, of which number 26 died—about 1 in 73.

Many of the posts were selected, necessarily, without reference to health; and disease was frequently engendered from other causes than those of climate, as forced marches, excessive fatigue, want of quarters, &c.—in recruits producing despondency and disease. Affections of the liver and spleen prevailed as the sequelæ of intermittents, though generally reported as intermittents, the primary disease. Many cases of this character were under my care in the general hospital at Tampa Bay. I have always been of opinion that the administration of quinine in large doses aggravated glandular obstruction of the liver in Florida. From the nature of the service in that Territory, it was desirable to check intermittents, and restore the soldier to duty with as little delay as possible. Hence, the free use of quinine controlling the periodical disease, but eventually aggravating hepatic obstruction, and oftentimes ending in serous effusion, debility, and death.

The troops actively employed in Florida, with frequent change of position, enjoyed better health than those who were permanent; which fact corresponds with the medical statistics of other services.

The moral despondency, consequent upon the failure of every effort to meet the enemy, was operative in adding largely to the sick-reports of officers and men.

I have the honor to be, with great respect, your obedient servant,

THOMAS LAWSON, Esq.,

*Surgeon General U. S. Army, Washington, D. C.*

R. C. WOOD,  
*Surgeon U. S. Army.*



## REPORT OF SURGEON BURTON RANDALL.

FORT GIBSON, *September 16, 1843.*

SIR: In answer to the interrogatories contained in your circular of August 14, I have the honor to state:

1. That I have occasionally prescribed quinine in very large doses, since 1840, with the happiest results, in congestive, remittent, and intermittent fevers. I also tried it last fall at New Orleans Barracks, in yellow fever; but it failed, as it always has, in my practice, where reaction is distinct. I have also prescribed it in neuralgia with beneficial results.

2. I have generally prescribed the sulphate; and, with one or two exceptions, it was pure.

3. The quinine I have generally used has been, to the best of my recollection, of French and German manufacture.

4. I prescribe it in doses of from two grains to one drachm; the former dose every hour in intermittents, where the intervals between the paroxysms are sufficiently long; where they are not, I give it in larger doses. This treatment rarely fails to check the paroxysm in one or two days.

5. I have employed the remedy in the above-mentioned diseases, and in very minute doses, as a tonic, where there was great debility and prostration of strength, without organic disease, produced by almost any cause.

I never prescribe it when the powers of life are in an exalted condition, and, therefore, do not know what its effects might be under such circumstances.

6. I believe the medicine beneficial in fever, by its tonic and sedative effects.

7. The acute diseases incident to Florida, and those the army suffered most from, were remittent and intermittent fevers, dysentery, diarrhœa, and rheumatism. I never saw a case of acute or chronic disease of the liver, spleen, or bowels, that I thought was produced by quinine; on the contrary, I think fewer diseases of the spleen, and fewer dropsies, come under my observation since quinine came into general use, and calomel ceased to be considered a specific, and therefore used with more caution.

Very respectfully, your obedient servant,

B. RANDALL, *Surgeon U. S. A.*

Dr. THOMAS LAWSON,  
*Surgeon General U. S. A., Washington, D. C.*

## REPORT OF ASSISTANT SURGEON (SURGEON) J. J. B. WRIGHT.

AUGUST 31, 1843.

SIR: In reply to the interrogatories contained in the circular from your office, dated August 14th, instant, I have the honor to state as follows:

*Answer to question 1.*—Previous to April, 1841, I had never exhibited quinine in larger quantity than twenty-five grains in twelve consecutive hours.

I have a distinct recollection of the circumstances under which, with a trembling hand and doubting hope, I gave the quinine for the first time to the extent specified. The patient was a lady, of great worth to the community and her family; and the disease, which made its approach in the shape of remittent bilious fever, had lapsed into intermittent, assuming a malignancy of aspect which awakened apprehensions for the issue. I did not leave the bedside of my patient during the continuance of the last paroxysm, for it presented all the symptoms which indicate serious tendency to congestion; and I was persuaded that, if another could not be prevented, she could not survive its termination.

Under this impression, and having confidence in the medicine, (if it could be introduced in sufficient quantity without incurring the risk of its poisonous effects,) I resolved to disregard the rule under which I had formerly acted, and to exhibit the quinine to an extent—to be determined by its effect upon the system—exhibited in divided doses. Commencing, therefore, as soon after the subsidence of the paroxysm as, in my judgment, was safe, I gave the lady four grains of sulphate of quinine every two hours (increasing the last dose to five grains) until twenty-five had been given, anxiously watching the effect of each dose. With a degree of satisfaction I have seldom felt under like circumstances, I witnessed the index of the clock pass the mark which had indicated the period of approach of the previous paroxysm, for I felt that my patient was safe. Her convalescence dated from that time.

Subsequently, while engaged in private practice, and for the first years of my service in the army, I acted under the rule comprised in the particulars of the case to which I have alluded.

In 1834, while on duty in Arkansas, I witnessed many cases of the malignant bilious fever of that country. The cases which became the subject of my charge were treated in the usual way. Quinine entered into the list of remedies, but was only exhibited, *under the canon*, when an approach to intermission or a distinct remission was apparent. One case, however, occurs to me as an exception to what I have stated, and, as having a bearing on the question propounded, I will allude to it.

Lieutenant (now Captain) H., of the 7th regiment of infantry, whilst on detached service in August or September, sustained an attack of remittent bilious fever, and, with a large majority of his command in like condition, was brought into Fort Gibson. For several days the fever pursued a regular course, and afforded grounds for belief that it was approaching a favorable crisis. Suddenly, however, a total change succeeded. The paroxysm anticipated the usual hour of incursion, and was characterized by all the symptoms of grave congestive fever—the brain being the principal seat of congestion. In one hour after the occurrence of the paroxysm, the sensorial functions were abolished, and very soon profound coma supervened; the extremities were cold as marble, the pulse almost extinct, the sphincters of the bladder and rectum utterly paralyzed, the respiration labored and irregular, the eyes upturned and injected; in fine, the patient seemed in the article of death.

All my sympathies being awakened for my friend, and all my anxieties for my patient, I hastened to the encounter, but, I must confess, with painful misgivings of my ability to contend successfully with the disease. Having at that time no precedent or authority for the exhibition of quinine in large doses, under such circumstances, I gave it in divided quantities, in union with calomel and camphor, to the extent in all of twenty-five grains; applied cold to the shorn head, epispastics to the thighs, sinapisms to the legs and arms, and, if I mistake not, opened the temporal arteries and applied cups to the neck. Under this treatment, the patient gradually recovered, with the loss of his hearing—almost total for some time, and, though ultimately greatly improved, audition is even at this day defective.

In this case, I confined the use of the quinine within the limit which my previous experience had taught me was safe, under dissimilar circumstances; and I shall never cease to award it the credit of having saved to his friends and the service a most worthy man and meritorious officer.

If it be said that the subsidence of the symptoms in this case was due to the other remedies employed, and that quinine was not the efficient agent in accomplishing the cure, I have only to say, in support of its claims, that I had never, *at that time*, witnessed recovery in a case apparently so utterly desperate; and that, *since then*, I have only known a fatal issue averted when the quinine has been administered in large doses.

My late "experience" in the use of this article has induced me to marvel at the over-caution with which I formerly exhibited it, and I can hardly repress a smile when I bring to my mental vision the spectres which my imagination conjured up.

In 1840 I was assigned to the Florida army, and ordered on duty at Garey's Ferry (Fort



Heileman). I arrived early in October, and succeeded to the charge of a full hospital. A majority of the cases (excluding those of intermittent fever) were remittent bilious, with manifest tendency to irregular sanguineous determinations and local congestions. I found at this post a deficient supply of quinine; and, estimating highly its importance in extreme cases, which I was prepared to expect (having already a foretaste of their advent), I husbanded my small resources, and, in ordinary cases of intermittent, gave what are regarded the substitutes for the bark.

Not yet having met with any notice of the modern practice with the article, and having as an example of the safety and advantage of its exhibition, *during the paroxysm of fever*, only the solitary case of Captain H., I did not rely upon it as a principal agent, but confined its exhibition principally to the apyrexial period of congestive intermittent, and the period of remission in the more continued forms of fever. My recollection revives the particulars of sundry cases, in combating which I fought with the weapons ordinarily used in such encounters; but in entering the lists with which, I should now press into my service (what I regard almost an *ipse agmen*) the sulphate of quinine.

In November, 1840, I joined the 1st regiment of infantry, which had recently taken post at Sava-Sota (Fort Armistead), a position combining, in an eminent degree, all the circumstances calculated to affect unfavorably the health of troops. During the winter, the command suffered only as might have been anticipated from their exposed situation, taking into consideration the fact that the regiment had been three years in the field, and deprived (for the last few months, at least) of a due supply of vegetable aliment. Intermittent fever prevailed to a considerable extent in the command, and was *interrupted*, ordinarily, by the use of quinine (grs. v, three times, during the interval).

My largest experience in the use of quinine having occurred during my service with the 1st infantry, and in the quarter ending 30th of June, 1841, I beg leave to quote from my report to the Surgeon General's office for that quarter of the year:

"That the 1st infantry has encountered disease since the last quarterly report, the present will abundantly testify. A strong scorbutic diathesis pervaded the command from the commencement of winter, which imparted to most of the forms of disease which occurred during that season some of the features of its own character. Dysentery, with tendency to total cachexia, and intermittent fever, constituted the bulk of the sick-report.

"About the 1st of April, there occurred more cases of remittent fever than we were prepared to expect so early in the season; but surprise gave place almost to consternation, when, toward the close of the month, there were added to the report twenty cases per diem of congestive fever. Fort Armistead was abandoned on the 2d of May," &c.

The sick, to the number of 200 or more, were taken to Cedar Keys, and ultimately transferred to Cantonment Morgan, three miles distant, where, the report goes on to state, "after considerable delay, and some hurtful exposure, we are very comfortable in hospital. The seat of congestion in this fever varied in the several cases. In some, the brain—in others, the liver and spleen—and in some others, the lungs constituted the principal seat of engorgement, as was evidenced by the symptoms, and by autopsic examination in the fatal cases. \* \* \*

"Excessive prostration of physical power seemed cotemporaneous with the attack, and the mental functions sustained early impairment. The whole surface of the body, but particularly the extremities, became preternaturally cold after the first paroxysm—in which, however, but a small degree of increased heat was developed. A cold, clammy, or limpid perspiration was incident to this condition of the skin. The tongue, at first pale and indented, sometimes smooth and shining, became dry and hard; the teeth were encrusted with sordes; the pulse was frequent, irritable, and often intermittent; the alvine discharges watery, and sometimes bloody, with tenesmus; the whole surface of the body presented a shrunken and contracted appearance; the respiration was hurried and irregular. The patient, in fine, presented that indescribable picture of wretchedness peculiar to those forms of disease in which the *lædientia* impress with



such intensity as to overwhelm the vital energies, and prevent the development of *normal* diseased action.

"The treatment consisted &c. \* \* \* \* \*

but, although my observation, during the progress of this fever, corresponds with all my previous experience in regard to the impotence (to say the least) of the lancet as a remedy in advanced congestive fever, and will induce me to banish it from my list of curative means in such cases, in all future time, I am happy in having been directed to a practice, of which, if I obeyed the impulses of my feelings, I should express myself in terms of extravagant commendation. I allude to the exhibition of sulphate of quinine in twenty, thirty, and even forty-grain doses, alone, or in combination with calomel.

"I will content myself for the present with saying, that in several instances it has seemed to rescue the subjects of this form of disease from the most impending danger. \* \* \*

"It is due to Drs. Harney and Randall, of the army, to admit that I entered on the practice at their urgent suggestion; for I will confess that I entertained much misgiving of its safety.

"My doubts are now utterly dissipated, and I would give a half, or even a whole drachm of quinine, with as little hesitation as the old '*ten and ten*' of Dr. Rush."

Having no precise statistical record in my possession, of the cases of congestive fever above alluded to, I can only state, in general terms, that the subjects of the disease to whom, in the report, I refer as exposed to the "most imminent danger," and to whom the quinine was exhibited in large doses, with advantage, could not have been less than fifty.

My subsequent experience with the article relates principally to its use in the remittent and intermittent fevers which came under my notice in the summer and autumn of 1842, in Florida; a few cases only of congestive disease having presented during this year. As a remedy in all these cases, the article fully sustained the favorable character it had previously established in my estimation.

*Answer to question 2.*—It was always the sulphate of quinine that I prescribed, and, in my opinion, it was pure.

*Answer to question 3.*—Furnished by the army medical purveyor.

*Fourth question.*—Replies to this question are contained in what I have said above.

*Answer to question 5th.*—In reply, I have to state that I have rarely exhibited the article in other forms of disease (in large doses) than those above stated. I am not aware that I have discovered any disparity of effect in the action of the remedy, determined by the different states of the system, in reference to its tonic or atonic condition. I have never exhibited it when there seemed to be present an inflammatory diathesis (contradistinguished from a febrile condition), nor would my recent experience induce me to rely with confidence on the quinine, as a supporting agent, in a prostrate condition of the system, unless the prostration could be regarded as the effect of the febrile agency still in operation.

I have not witnessed injurious effects from the medicine in any case that I can call to memory; and the only unpleasant symptoms that I have observed to follow its use were more or less buzzing in the ears, and occasionally slight dizziness. These symptoms have uniformly subsided with the paroxysm.

*Answer to question 6th.*—It is said the contemporaries of the Countess of Cinchon—the friars, who first published the fame and disseminated the use of the Peruvian bark as a remedy for intermittent fever—regarded it as a *specific*, perhaps as an *antidote*, to the poison of malaria; and modern observation seems to have furnished some reasons for doubting if the speculations which have been indulged by their successors have led to any better conceptions of the *modus agendi* of its efficient principles. With the profession, it is dangerous, now-a-days, to talk of "specifics," or even of antidotes, unless we are ready with a philosophical *rationale* of every step in the process by which the end is attained; and yet, however humiliating to the pride of science, we must admit that there are many things connected with the principles and practice of medicine that we do not comprehend. Individuals form theories; they indulge in elaborate

and ingenious hypotheses, and admire the creations of their fancies, the fictions of their closet speculations, until they actually persuade themselves, and others too, that their conclusions are the result of legitimate deductions from ascertained facts—admitted premises; that even the spirit of Lord Bacon itself presided over their deliberations, and has affixed its seal to the truth of their *philosophy*. These systems are destined to last until some succeeding revolutionist in medicine saps their foundations, to erect on their ruins a superstructure no less comely to look upon, but awaiting, in after time, a similar fate, because speculations, and not facts, constituted their basis.

Thus it has ever been since the dawn of medicine; and we apprehend its future historians will but record a succession of like events, until it shall have established for itself a place among the fixed and certain sciences.

We would not controvert the truth that medicine has made giant strides, in the way of improvement, within the last century. On the contrary, we are proud to boast that every year has added to the resources of the art; for that genuine inductive philosophy has infused its spirit into the investigations of many of its ardent cultivators.

But there are many secrets in physiology and therapeutics yet undivulged: and, perhaps, a precise and definite conception of the manner by which certain articles of medicine effect a cure in diseased conditions of the system will remain among the desiderata until medicine shall have received the last finishing touch from the hand of science.

We mean these remarks as prefatory to the expression of a doubt whether the bark, or its proximate principles, arrest intermittent fever, and other forms of febrile affection dependent on miasmatic origin, by virtue of the tonic property inherent in them. We are not prepared fully to deny that the medicine possesses tonic virtues; it is an opinion sanctioned by the concurrent belief of the profession for more than a century. But my late experience authorizes and inclines me to believe that the remedy exercises over fevers of this genus a peculiar and specific control, independent of, and distinct from, any effect which it may be presumed to have upon the *tonicity* of the muscular fibre.

Some practitioners, whose experience in the use of this article of the *materia medica* has been by no means inconsiderable, have been led by observation of its effects to class it among the *sedantia* (as is intimated by the terms of the query to which I am making an humble attempt to respond), and several plausible articles have been written in support of this view of its properties.

It must be admitted, that if I were reduced to the alternative of adopting one or the other of these opinions in regard to the character of the medicine, my late observations would incline me to entertain the latter, though some unexplained facts would still stare me in the face and perplex my understanding. They who contend that its curative agency is due to a direct effect on the *tonicity* of the muscular fibre, will proscribe its use in all cases where this vital property, or the contractility of the system, may be presumed to be in an exalted condition. But the experienced physician of modern times, in southern climates particularly, will tell you that he is in the practice of administering it when the condition of those vital properties is, seemingly at least, above par. For instance, he exhibits the article at the very height of the paroxysm of the remittent fever of his climate, and finds, as a result of its action, a reduction in the force and frequency of the pulse, a diminution of animal heat, a moist condition of the skin, a subsidence of pain and restlessness; in fine, a sudden conversion from febrile disturbance to fair convalescence. Now, if the experience and observation be right, can the theory be otherwise than wrong?

On the other hand, those who maintain that the remedy acts by sedation, do not hesitate to exhibit the article when the powers of life are depressed to the utmost limit compatible with existence; and they aver that its agency is curative under these circumstances.

True it is, that the writer has himself frequently given the quinine in both the conditions stated; and, in both, his experience teaches that advantage resulted from the practice. He has



witnessed a decided improvement follow the exhibition of  $\mathfrak{D}$  ij of quinine, repeated in two hours, in advanced congestive fever, when the condition of the case was characterized by a lethargic state of the sensorial functions, verging on coma; cold extremities; cool surface, bathed in limpid perspiration; dry and pallid tongue; feeble and fluttering pulse, &c. And again, while on duty in Florida, in the summer of 1842, in charge of the general hospital, it was his usual custom, after attentive observation of the safety of the plan, to exhibit 20 grains of quinine *at any period of the paroxysm* of the remittent fever of that country; and he is safe in declaring that the practice was successful, as the quarterly reports to the Surgeon General's office will testify—not a single case of death from remittent fever having been reported during the season, nor, I may add, from their sequelæ.

In southern climates, where high atmospheric temperature prevails, the system, it is well known, becomes languid and relaxed. This condition is the effect, no doubt, of the exhausting influence of the prolonged action of caloric. Indirect debility is induced, and, with this loss of tone in the system, its irritability is exalted. Excessive mobility is impressed on the whole apparatus of life. The pulse is quickened; morbid sensibilities and new susceptibilities, mental and physical, are awakened; and hence do the “children of the sun” become distinguished, in all that relates to temperament and disposition, all that constitutes peculiarity in sectional character, from their cool, calculating, and deliberate brethren of the north.

But, if this is true in regard to the system in health, it is no less so when it is under the influence of morbid agents; and it might, with some show of plausibility, be maintained that, in this condition, *tonics* operate indirectly by *sedation*, quieting excitement by imparting tone. And thus, perhaps, could they who entertain this view of the medicinal properties of the quinine reconcile their notions of it with its effects, as illustrated in the cases of fever, in which it has been given with advantage in the *pyrexial* period.

It is said that recent observations, in our own and other countries, have demonstrated the advantages of quinine in acute inflammatory rheumatism, and other forms of disease in which stimulant tonics are, confessedly, not only inappropriate, but manifestly pernicious.

We have the testimony of such men as Morton, Fothergill, Haygarth, &c., of the last age, in favor of Peruvian bark in inflammatory rheumatism; and the present professor of midwifery in the University College, London, (Dr. Davis,) furnishes unequivocal evidence of the paramount advantage of the remedy in such cases. (*London Lancet*, February, 1841.)

The writer has no experience of its effects exhibited in such conditions of the system; but, if time should verify its claim to confidence in those diseases, it will but furnish another argument in support of the position I have assumed, that its medicinal properties are not fully comprehended or established.

There are strong reasons for believing that the antimonial medicines possess direct febrifuge virtues, independent of any influence they exert over the heart and arteries, by their nauseating effect upon the stomach. The action of mercury in the cure of lues venerea has never been explained in a way which can seem satisfactory to those who profess to exhibit no article of medicine, the precise physiological effect of which they do not understand. To designate a whole class of remedies as “alteratives,” is but to admit that they produce their effects in some occult way, which we do not comprehend. I might go on and enumerate almost half of what is contained in the *Armamentarium* of physic, and include the whole in this category; but I will finish what I have to say in regard to the “modus operandi” of quinine in the fevers of malarial regions, and write myself the advocate of the notion entertained by the Jesuits, to wit: its agency is *specific*.

It is thought that this article, in combination with mercurials (calomel particularly), accelerates the supervention of ptyalism. I have no doubt of the fact. I am disposed to ascribe it to a presumed chemical decomposition, in part, of the combined articles in the stomach, and a new arrangement of a portion of the sulphuric acid of the quinine with a due proportion of the oxyd-hydrargyric of the calomel, to form, perhaps, the yellow sulphate of mercury—a preparation of the



mineral known to produce salivation as speedily as any other of the mercurials; or, if the chemists advise that no incompatibility exists between calomel and quinine, and that no such presumed change can occur in the stomach to account for this alleged fact, then I would suggest that the latter article facilitates the mercurial impression, simply by counteracting the morbid impression of the febrific agent, and the diseased actions hence resulting (in correspondence with the opinion before stated, viz: by its specific effect)—thus bringing the susceptibilities of the system to a condition approximating the healthy standard; for it must be admitted that, just in proportion to the intensity of morbid action, is the difficulty in establishing the constitutional operation of the mineral in any given case of disease.

*Quere 7.*—Broussais, in his “Chronic Phlegmasia,” has shown, as we think very satisfactorily, that long-continued atmospheric heat, combined with moisture, has an invariable tendency to induce chronic inflammation of the mucous coat of the larger bowels; thus giving origin to diarrhœa and dysentery, with ultimate liability to ulceration of the colon and rectum. High and long-continued atmospheric heat and moisture distinguish the climate of Florida; and when it is remembered that the centripetal tendency of the fluids, in the cold stages of intermittent, (so frequently recurring among the troops serving in that Territory,) determine congestive accumulations and irritations in the internal organs, we think the fact stated in the circular is susceptible of explanation, without charging anything to the account of quinine.

To say that, since the practical introduction of the article in large doses, diseases of the bowels have become more frequent and more fatal, is, in other words, to affirm that, during the last two years of the war, these affections had become more frequent and more fatal; a fact which might have been anticipated, since the army had been long in the Territory, and, consequently, (if the foregoing etiological views be correct,) longer exposed to the causes which induce “diseases of the bowels.”

No pathological view of these diseases can, it is believed, be correct, which is irrespective of the condition of the skin. It is fair to presume that this organ is primarily impressed, and that the lining membrane of the *prima via* is implicated, in virtue of the intimate sympathy which is acknowledged to exist between it and the former. The persistence of the bowel affection, then, is probably due to the derangement of the dermoid apparatus; and, until the latter is restored to its integrity of function, the morbid condition of the bowel can hardly be expected to subside under any plan of treatment. Broussais has remarked, somewhere, that when the skin, in these forms of disease, presents a straw-colored appearance and inelastic condition, ulceration of the mucous coat of the bowels may be apprehended, and that, in a large majority of such cases, a fatal result will ensue.

A very enlarged experience with the bowel affections of Florida has impressed strongly on my mind the opinion, that there are few forms of disease in the catalogue, less amenable to the resources of the art.

*Answer to question 8th.*—I think the most conspicuous effect of the climatic influences in operation in the Territory of Florida is exhibited in the almost universal tendency to chronic phlegmasia of the mucous coat of the colon and rectum, manifesting itself in the symptoms of diarrhœa and dysentery; at least, this is the result of my experience. It is assuredly true in reference to the effect of climate, &c., on the army during the last two years of the war. The congestive fevers of that climate have nothing peculiar in their character; and the common remittent, as it prevailed among the troops, did not differ in any particular from remittent bilious fever as it occurs elsewhere, unless in mildness of character, and tractability under proper treatment.

Post-mortem examinations were conducted in a large majority of the fatal cases in the general hospital at Cedar Keys, as well as at the post hospitals, at different times under my charge in Florida. My observation teaches that the liver and spleen less frequently presented evidence of diseased condition than is usual in sections of the country where miasmatic causes of disease prevail. The proportion of cases in which these complications existed was infinitely smaller

in Florida than I had previously observed in Arkansas. Even the swelled spleen, so common in other aguish districts, was a rare spectacle.

I can readily conceive, in explanation of this apparent immunity from congestive enlargement, and from other obvious disease, on the part of the liver and spleen, where ulceration exists in the larger bowels, that, in obedience to the law pathological, as well as physiological, "*ubi irritatio, ibi fluxus*," the fluids impelled toward the central organs (under circumstances calculated to produce irregular distributions) are diverted to the point where irritation exists in greatest intensity. In other words, the irritation of the bowels, serving as "*a diverticulum*," secures the liver and spleen from an influx of blood sufficient to derange their healthy functions, much less to leave after death appreciable traces of organic lesion. I have no reason to think, therefore, that the use of quinine had any agency in inducing acute and chronic affections of the liver and spleen.

With the exception of some few cases of sub-acute dysentery, and the fevers above alluded to, and some cases of inveterate acute ophthalmia, the forms of disease which fell under my notice, while serving in the Territory, were principally chronic; most of them, perhaps, protean forms of malarial affections.

I am, sir, very respectfully,

J. J. B. WRIGHT, *Assistant Surgeon U. S. Army.*

TH. LAWSON, M. D.,

*Surgeon General U. S. Army.*

#### REPORT OF ASSISTANT SURGEON (SURGEON) BERNARD M. BYRNE.

FORT MARION, ST. AUGUSTINE, EAST FLORIDA,  
October 29, 1843.

SIR: In reply to your circular, dated the 14th of August, 1843, on the subject of quinine, I have the honor to state:

1st. That my experience in the administration of this medicine in very large doses has not been extensive, as it has only been within the last eighteen months that I have undertaken to test its powers when administered in doses as large as xx grains; and even during that period, my opportunities of experiment were quite limited, in consequence of the very healthy state of the troops with which I served.

2d. It was always the sulphate of quinine which I prescribed, and I have every reason to believe that its quality was pure.

3d. The quinine which I prescribed was always obtained from the purveying department of the United States army.

4th. The largest doses in which I have administered this remedy did not exceed  $\text{ʒ}ij$ , and it was only on rare occasions that I gave so large a quantity at a single dose. My average dose was about four grains, and the average quantity which I administered within twenty-four hours did not exceed one scruple.

5th. Intermittent and remittent fevers, neuralgia, and rheumatism were the principal diseases in which I administered this remedy in large doses, and the state of apyrexia was the one generally chosen for its exhibition.

In the treatment of intermittent fevers, I have, for at least seven years, been in the habit of administering, during the period of intermission, four grains of quinine every six hours for the first day; and this I found almost invariably interrupted the paroxysms. I then diminished the quantity to six grains in the twenty-four hours, and continued its exhibition for about five days longer; and it was but seldom, after having thus administered about  $\text{ʒ}j$  of this medicine, that a paroxysm returned, unless the patient had been exposed to fresh causes of disease.



I have, within the last eighteen months, frequently resorted to the method of administering  $\text{ʒ ss.}$  of this medicine in a single dose the first day,  $\text{xv}$  grains the second, and  $\text{x}$  grains the third day; and my experience has been such as to induce me to abandon this practice. The convenience of being able to administer the medicine in *fewer* doses is all the advantage which I have been able to discover in this latter over my former method of employing it; while, on the other hand, the more frequent returns of the disease, the temporary deafness and blindness, together with other unpleasant nervous symptoms, which I have seen so frequently result from its exhibition in those larger doses, have determined me hereafter, in the treatment of intermittent fever, not to administer this medicine in doses larger than four grains, unless in *cases of emergency*.

I have, in several cases of severely congestive intermittent and remittent fevers, administered quinine in doses as large as  $\text{ʒ ij.}$ , and repeated this quantity five times in the twenty-four hours, and, as I conceived, with the most happy effect; and I can readily believe that even larger doses, and more frequently repeated, may be employed with advantage in averting a fatal paroxysm in fevers of a highly malignant grade.

The instances in which I have given quinine in large doses during the hot stage of fever, have been too few to enable me to form a decisive opinion as to the general expediency of this practice. I have, in six cases of remittent fever, administered  $\text{ʒ ss.}$  during the period of exacerbation, and the result was such as to encourage me to repeat the experiment when opportunity offers. In four of these cases, the most prominent symptoms were greatly alleviated in about half an hour after the exhibition of the remedy; violent headache, pain in the back, and restlessness, were promptly relieved, and the fever subsided in a much shorter time than in the previous exacerbations, in which quinine had not been administered. In the other two cases, I was not able to discover any marked result from the exhibition of this medicine.

I have frequently employed quinine in doses of from  $\text{x}$  to  $\text{xxx}$  grains in the treatment of neuralgia and chronic rheumatism, and very generally with decided benefit.

6th. So little is known respecting the *modus operandi* of any therapeutic agent, that it is with much diffidence I venture to offer an opinion on that of the remedy in question. I am, however, in the employment of this medicine, governed by some theoretic views, of which I shall here present a brief outline.

Whether quinine may act as a "stimulant," a "tonic," or a "sedative," appears to me to depend on the condition of the system at the time of its administration, and on the quantity administered. The fact that this medicine has frequently the effect of accelerating the action of the heart, of occasioning fullness of the head, buzzing in the ear, and other distressing cerebral symptoms, affords, I should think, sufficient proof that it is not *exclusively* "sedative" in its action. On the other hand, it is difficult to regard an agent as exclusively stimulant or tonic, which, when administered in large doses, during the paroxysm of fever, has the effect of allaying pain and subduing the febrile exacerbation. Whatever, therefore, may be the nature of the *primary* impression which it makes, whether stimulant, tonic, or sedative, so varied are its effects in different conditions of the system, and when administered in different quantities, that it appears to me no practical advantage can result from giving it any other *nomen* than that of quinine. On the contrary, were it even possible to determine with certainty that the first impression of this agent is that of a "stimulant," it might lead to much practical mischief to designate it by that name, since it is known, under various circumstances, to exercise the opposite effect. The same objection would obtain against naming it "sedative," even were it certain that such was its primary impression on the system. All that is known respecting the primary effect of this medicine is, that it is capable of making a powerful impression on the nervous system. What the *nature* of that impression is, will probably never be known; nor is it likely that a knowledge of it would be attended with any practical benefit. Its impression must, of course, be specifically different from that of all other agents; and if it be expe-



dient to designate it by any particular name, none can be so expressive as the term *quinine impression*. It is only to the effects which result from this impression, both in the normal and pathological conditions of the system, that the inquiry of the physician can be profitably directed.

It appears probable that the remedial agency of this medicine depends on the *counter-impression* which it makes on the nervous system, and especially on the ganglionic portion of it: and if this position could be established, many of the apparent contradictions respecting its *stimulant* and *sedative* character might be reconciled.

We have strong reasons for believing that it is principally on the ganglionic system of nerves that miasmatic and pestilential poisons make their first impression; and it is in accordance with a well-established medical axiom to infer, that an agent which can produce a powerful *counter-impression* on the same system of nerves, may thereby modify or control the morbid effects of those poisons. That quinine exercises a powerful impression on the nervous system, is sufficiently evinced by the nervous commotion which it generally occasions when administered in the normal state of the system. But it is found, on the other hand, that large doses of this medicine, administered in the paroxysm of an idiopathic fever, are not only attended with less nervous distress than in the former case, but have the effect of assuaging pain and of alleviating all the febrile symptoms. This apparent discrepancy can be explained on the principle of counter-impression. Quinine, when administered in the normal state of the system, meets with nothing to modify its specific impression, and it therefore manifests all the phenomena by which this impression is characterized. It has, on the contrary, in the case of idiopathic fever, to contend with the morbid influences of a poison, which must necessarily modify, if not entirely control, its effects: and the consequence is, that it manifests less of the *quinine impression* than when administered in health. This view of the subject is illustrated by the effects of large doses of opium in tetanus, of colchicum in rheumatism, of emetics in croup, and of other powerful therapeutic agents, which seem to expend their energies in overcoming morbid conditions of the system.

When the impression which quinine makes on the system is sufficiently powerful to overcome that of the poison, the primary link in the chain of morbid action is broken, and what are termed its *sedative* effects become manifest. Thus, it would appear that this remedy, when administered to a person in health, may powerfully excite the nervous system, or merely produce a "tonic" effect, according to the *quantity* exhibited; while, in cases of disease, its effects are as various as are the pathological conditions which it is brought to oppose.

Guided by views of which these form an outline, I seldom exhibit this remedy in doses larger than four grains, except in cases of severe disease. In fevers of a malignant grade, which require prompt and powerful treatment, and especially in such as are supposed to result from *miasmatic* poison, I am disposed to administer quinine in very large doses from the first, and to repeat it during any stage of the disease, in quantities corresponding with the severity and persistency of the symptoms. In diseases of this character the poison makes rapid inroads on the system, and, if not checked within the first few hours, there is but little hope of controlling it. Under such circumstances, there is no time for tampering, and our practice must be energetic and decisive, or else unsuccessful. But in ordinary cases of intermittent fever, and in all mild and chronic forms of disease, I am decidedly opposed to large doses of this remedy, as I believe them to be generally inexpedient, and oftentimes mischievous.

We have much reason to believe that, in a great majority of cases of intermittent fever, the return of the paroxysm depends more upon the *habit* which the system has acquired than upon the immediate action of the poison: and if this be true, our remedies should be directed with a view to the *permanency* rather than to the force of their effects. It is established by ample experience, that quinine, in doses of four grains, administered four times during the first day, will generally make an impression sufficiently powerful to interrupt the paroxysms. When this is done, it only remains for us to overcome the *habit* which has been impressed on the sys-

tem; and this is much more likely to be accomplished by the moderate and permanent, than by the powerful and transient effects of the remedy. We would, for example, be much more likely, after the paroxysms had been interrupted, to prevent the return of a periodical disease by administering six grains of quinine every day for ten days, than by giving sixty grains of it in two days. Besides, we would avoid the very unpleasant, if not serious consequences, which sometimes result from the exhibition of very large doses of this medicine.

That an agent which is capable of producing such a powerful impression on the nervous system may, if injudiciously administered, cause much mischief, must be obvious, even had we not the practical evidence of it afforded by those whose constitutions have been seriously and permanently injured by it. The important discovery that this remedy can be administered with advantage in doses much larger than were formerly considered safe, has led some into the dangerous extreme of employing it without either limit or discrimination. There has sprung up within the last few years a small sect of quinine enthusiasts, who, if we may judge from the indiscriminate and unlimited manner in which they administer their favorite remedy, are of opinion that it is not only a panacea, but that it is a panacea which "can do no wrong." It is very evident that, if quinine possess not the power to do harm, it must be totally inert, and can therefore effect no good; as there is no agent, which exercises any power whatever on the system, whose power may not, under certain circumstances, be productive of mischief. These gentlemen, however, denominate it a "sedative," and contend that it is only in its *curative* effects that its power is manifested. This view of the subject presents to them a safe and unlimited field of experiment; and we find, accordingly, that there is scarcely a disease in the whole catalogue of human sufferings in which this medicine has not already been administered in indefinite quantities. It matters not what may be the character of the disease, mild or severe, chronic or acute, the heroic remedy is given in doses of from thirty to fifty grains, with fearless empiricism. That this unguarded and indiscriminate employment of so powerful an agent will be attended with much mischief, there cannot be a reasonable doubt: but it is, on the other hand, consoling to reflect that there is in this, as in most other evils, some power of compensation; and that the vast amount of experience which will be promptly derived from this extensive empiricism will in some measure atone for its mischief.

7th. My experience does not authorize me to infer that the administration of quinine in large doses has been the cause of dysentery or other diseases of the bowels. I have, within the last twelve months, witnessed a much lower ratio of severe bowel affections than during those years when the troops were engaged in active service. This I attribute to the cessation of the severe exposures, hardships, and privations to which the war subjected them. The cases of liver and spleen disease which I have met with among the troops, have been remarkably few, and in none of them could I ascribe its origin to the abuse of quinine. I have, however, met with several cases of *nervous* affections, which evidently resulted from the administration of large quantities of this medicine. I have witnessed four cases in which partial deafness was experienced for upwards of three months; one in which the deafness was *permanent*; and one in which almost total blindness was occasioned for several days, and in which perfect vision was not restored for some months. These cases were all clearly attributable to the administration of quinine in large quantities. I have, besides these, met with numerous other cases of nervous derangement of a chronic character, such as slight spasmodic affections, frequent attacks of vertigo, palpitations of the heart, cephalalgias, nervous tremors, &c., which it appeared to me could be fairly ascribed to the same cause. In nearly all those cases the remedy had been exhibited in doses of from x to xxx grains; and in several of them, as high as 200 grains had been administered within ten days.

8th. As the climate of Florida is a subject which I intend to discuss at some length, as soon as I can have access to the medical statistics of the army, I shall merely remark, on the present occasion, that my observation and experience, during five years, have been such as to give me a most favorable opinion of its salubrity. Its general influence is to bestow a milder type upon



the acute diseases of other climates; and this is true as regards miasmatic diseases, as well as all inflammatory affections.

I have the honor to be, very respectfully, your obedient servant,

BERNARD M. BYRNE,

*Assistant Surgeon U. S. A.*

Dr. THOS. LAWSON,

*Surgeon General U. S. A., Washington.*

#### REPORT OF ASSISTANT SURGEON (SURGEON) CHARLES McCORMICK.

"As the propriety of the administration of quinine in very large doses has become a mooted question throughout the medical world, and as various members of the medical corps of the army have had more or less experience in this particular, you are hereby directed to furnish replies to the following interrogatories:

"1st. What is the extent of your experience in this respect?"

Ans. I have used the sulphate of quinine in large doses—say, from four to thirty grains and upwards—constantly, about four years.

"2d. Was it always the sulphate of quinine that you have prescribed? If so, was it pure?"

Ans. I have always used the sulphate of quinine, simply diffused in water as a vehicle. All I have used has been pure.

"3d. From what source has your quinine been obtained?"

Ans. From American, French, and German manufacturers; such, for instance, as Wetherill, Rosengarten & Denis, and Farr (American), Pelletier, Caventou, and Delondré (French).

"4th. In how large doses have you administered it, both as regards the extreme and the average quantity?"

Ans. In doses varying from one-sixth of a grain to eighty grains. The average dose I employ in intermittent fevers is ten grains just after, and ten grains three or four hours before, the period for the paroxysm. In remittent and continued fevers, thirty grains is the average dose in which I administer it.

"5th. State the specific diseases in which you have employed it, with all the necessary details, and especially as regards the tonic state of the system; and whether injurious effects, or at least unpleasant symptoms, did not less frequently supervene in the adynamic state than when the powers of life were in an exalted condition?"

Ans. I have employed the sulphate of quinine in the treatment of all kinds of fever—intermittent, remittent, and continued; in acute and chronic rheumatism, neuralgia, and tetanus; with great benefit in the early stages of dysentery, diarrhœa, and cholera morbus, in combination with opium. I have given it under all circumstances, in the prodromic, the cold, hot, and sweating stages of fever, and during the intermissions and remissions, in simple uncomplicated fever, and in fevers complicated with various local inflammations of the head, chest, and abdomen; and never have witnessed any injurious effects or unpleasant symptoms, when it was given in large doses.

"6th. Give your opinion as to the *modus operandi* of this therapeutic agent; whether, for instance, you regard it as a tonic, a sedative, or a stimulant."

Ans. I regard it as a sedative.

"7th. Since the practical introduction of quinine in large doses, the statistics of this Bureau exhibit a much higher ratio of diseases of the bowels—as, for instance, diarrhœa and dysentery; and, also, a much higher average of mortality from the same diseases. It remains, therefore, to be determined, how far this result is due to this cause, or the operation of other agents."

Ans. In replying to this interrogatory, I would suggest that the fact it refers to may be traced



to some other cause; as, for instance, by a strict examination of the reports of sick, in your office, it may be found that the reports containing the greatest number of such cases have been made by medical officers who have used this remedy only after the old method, and have not given it in the stage of febrile reaction, with a view to arrest the disease. However this may be, I am fully satisfied, from long and impartial use of the sulphate of quinine in my own practice, that it has been otherwise; and since using it in large doses, and freely, I have had fewer diseases of the bowels supervening and ensuing on fever; and that, under many circumstances, these very affections are relieved by the timely administration of this remedy. A remarkable case of this nature (dysentery relieved by this remedy) I reported to you in my quarterly report for the quarter ending 30th September, 1841. Quinine possesses the power to arrest the progress of fever, and, as a necessary consequence, prevents the local disorders that fever, when suffered to run its course, almost always induces.

“8th. What have been your observation and experience in regard to the influence of the climate of Florida; the acute diseases incident thereto; or the use of quinine in inducing acute and chronic affections of the liver and spleen?”

Ans. The climate of Florida, and the acute diseases incident thereto, have both a decided tendency to induce acute and chronic affections of the spleen, and frequently of the liver; but the former are much more common. In my opinion, the use of quinine, so far from being concerned in causing these affections, is almost the only remedy we possess capable of counteracting this tendency of the climate and its acute diseases; and in removing these affections, it is an invaluable remedy, especially in enlargement of the spleen, which it often reduces as if by magic.

“9th. State whatever else you may deem appropriate to the subject.”

Ans. In replying to this, I have to say that, notwithstanding the propriety of administering the sulphate of quinine in very large doses is a mooted question throughout the medical world, it is far less a novelty in medicine than its exhibition during the exacerbations of intermittent, remittent, and continued forms of fever; or, in other words, when the powers of life are in an exalted condition. We may prescribe any number of grains at a dose, and yet regard the remedy as a tonic; but, surely, no person would venture to administer it to a patient at the time laboring under high febrile excitement, so long as he regarded the remedy as belonging to the class of excitants. An extensive experience in practice of nearly four years has satisfied me, beyond a possibility of doubt, that it may not only be advantageously given *in very large doses*, but also (and what I regard as a far more important fact) that it can be given thus without fear of any injurious effects or unpleasant symptoms, in any state of the system whatever, *even during the highest febrile excitement*. This single fact (for fact it is) is conclusive evidence that this medicine cannot be regarded as belonging to the class of excitants, since they are altogether inadmissible *when the powers of life are in an exalted condition*.

The same experience has taught me that it has no power to augment or increase inflammation, or retard its cure; and, again, that it may, with safety, be given in large doses, at all times, and *under all circumstances*; and that it possesses the power to arrest fever; and, as a consequence, when administered in the early stage, to obviate and prevent the congestions and inflammations that occur during the progress of fever.

That these statements are facts, any person can satisfy himself by administering this remedy in any number of cases where the powers of life are in an exalted condition, in large doses, and closely watching its effects. Let it, then, be given thus, in any inflammatory disease whatever, at all times, and under all circumstances; and it will not be found to augment or increase local inflammations, but, on the contrary, to accelerate their cure. Given in large doses, boldly and freely, during the high febrile excitement of idiopathic and arthritic fevers, it will be found to lessen the force of the pulse, diminish the heat and dryness of skin, and restlessness, and to throw out on the surface a general warm and free perspiration; in short, in a few hours (generally from one to three or four) to cut short the paroxysms and arrest the

further progress of fever; generally acting sensibly on the skin, occasionally on the secretions from the bowels, producing free alvine dejections; and, again, on the kidneys and bladder, in a free secretion and discharge of urine; and sometimes, without any other sensible effect, the fever is seen to subside under the influence of this potent drug. The quantity necessary to produce these effects may vary in different cases; generally a dose of thirty grains will be sufficient. Where venesection is required, let the sulphate be given immediately after.

Stimulants possess the power of exciting, and sedatives that of diminishing the animal energies. Tonics are classed as permanent stimuli. If, then, a remedy may not only be safely, but advantageously administered to patients laboring under high fever, acute rheumatism, and fevers with various local inflammations, it surely must be admitted that it does not possess the power of exciting the animal energies, and is not, therefore, a stimulant or tonic; for, as previously stated, such remedies are altogether inadmissible when the powers of life are in an exalted condition; and as, on the other hand, it is found to lessen the force of the pulse, heat, and dryness of the skin, to allay restlessness, and to throw out on the surface a general warm and free perspiration, if given at a time when the powers of life are in an exalted condition, its action more closely resembles that ascribed to the class of antiphlogistics. But it possesses other powers than those of an antiphlogistic, and to these its apparent action, as such, is to be attributed. When given in large doses, I have seen it allay pain as speedily as opium; and it often acts, not only as an anodyne, but as a soporific. In spasmodic asthma, I have seen it afford relief frequently. In one case of traumatic tetanus, I gave it to allay spasmodic action, with more effect than opium. And in a case of agonizing pain, brought on by the crown of a large jaw-tooth having broken off in a violent effort to extract it, this remedy gave immediate relief, when a large dose of tincture of opium had failed. Here, then, are further properties I have found this remedy to possess, more analogous to the effects of opium (which is admitted to be a sedative) than any other remedy we have; but it differs from opium in the greater permanence of its effects, and in not possessing any narcotic properties; and, consequently, it may be given in unlimited doses. I have given three-quarters of an ounce (360 grains) to a patient in the space of twelve hours, with the most beneficial result. Like opium, too, its action is almost immediate upon the brain and nerves. In two or three hours after a large dose, it almost invariably induces a sense of fullness in the head, stricture across the forehead, slight pain, ringing and buzzing in the ears, and partial temporary deafness; and a peculiar muscular debility frequently follows its administration.

I have found opium and quinine to have a similar action when given in congestive fever, particularly in the cold stage. They are the remedies I especially rely on in this disease. Like quinine, opium, when given in a full dose, seldom fails to arrest the paroxysm of an intermittent, (this I noticed in a report made to you in 1839,) or to moderate the fever when given in the hot stage. Drs. Lind, Trotter, and others, speak of the beneficial effects of opium, when given in the hot stage, of allaying fever. Like opium, too, the action of quinine is highly favored by blood-letting, when required. In short, it possesses the power, in large doses, of diminishing the animal energies, and is, consequently, a sedative.

These are essentially the same facts stated in my report to you in September or October, 1841.

To favor the view I have taken of this remedy, I will add the following extracts from Professor Liebig's *Animal Chemistry*:

“88. With respect to the action of the other nitrogenized vegetable principles, such as quinine, or the alkaloids of opium, &c., which manifests itself, not in the processes of secretion, but in phenomena of another kind, physiologists and pathologists entertain no doubt that it is exerted chiefly on the brain and nerves. This action is commonly said to be dynamic—that is, it accelerates, or retards, or alters, in some way, the phenomena of motion in animal life. If we reflect that this action is exerted by substances which are material, tangible, and ponderable; that they disappear in the organism; that a double dose acts more powerfully than a single one; that, after a time, a fresh dose must be given, if we wish to produce the action a second



time: all these considerations, viewed chemically, permit only one form of explanation—the supposition, namely, that these compounds, by means of their elements, take a share in the formation of new, or the transformation of existing brain and nervous matter.

“However strange the idea may at first sight appear, that the alkaloids of opium or of cinchona bark, the elements of codeine, morphine, quinine, &c., may be converted into constituents of brain and nervous matter, into organs of vital energy, from which the organic motions of the body derive their origin—that these substances form a constituent of that matter, by the removal of which the seat of intellectual life, of sensation, and of consciousness, is annihilated: it is nevertheless certain that all these forms of power and activity are most closely dependent, not only on the existence, but also on a certain quality of the substance of the brain, spinal marrow, and nerves; insomuch that all the manifestations of the life or vital energy of these modifications of nervous matter, which are recognized as the phenomena of motion, sensation, or feeling, assume another form as soon as their composition is altered. The animal organism has produced the brain and nerves out of compounds furnished to it by vegetables: it is the constituents of the food of the animal, which, in consequence of a series of changes, have assumed the properties and the structure which we find in the brain and nerves.”

“89. If it must be admitted, as an undeniable truth, that the substance of the brain and nerves is produced from the elements of vegetable albumen, fibrine, and caseine, either alone or with the aid of the elements of non-azotized food, as the fat formed from the latter, there is nothing absurd in the opinion that other constituents of vegetables, intermediate in composition between the fats and the compounds of proteine, may be applied in the organism to the same purpose.”

“91. Brain and nervous matter is, at all events, formed in a manner similar to that in which bile is produced—either by the separation of a highly nitrogenized compound from the elements of blood, or by the combination of a nitrogenized product of the vital process with an on-azotized compound, probably a fatty body. All that has been said in the preceding pages on the various possible ways by which the bile might be supposed to be formed—all the conclusions which we attained in regard to the co-operation of azotized and non-azotized elements of food, may be applied with equal justice and equal probability to the formation and production of the nervous substance.

“We must not forget that, in whatever light we may view the vital operations, the production of nervous matter from blood presupposes a change in the composition and qualities of the constituents of blood. That such a change occurs, is as certain as that the existence of the nervous matter cannot be denied. In this sense, we must assume that, from a compound of proteine may be formed a first, second, third, &c. product before a certain number of elements can become constituents of the nervous matter; and it must be considered as quite certain that a product of the vital process in a plant introduced into the blood, will, if its composition be adapted to the purpose, supply the place of the first, second, or third product of the alteration of the compound of proteine. Indeed, it cannot be considered merely accidental that the composition of the most active remedies—namely, the vegetable alkaloids—cannot be shown to be related to that of any constituent of the body, except only the substance of the nerves and brain. All of these contain a certain quantity of nitrogen; and, in regard to the composition, they are intermediate between the compounds of proteine and the fats.”

“92. In contradistinction to the chemical character, we find that the substance of the brain exhibits the characters of an acid. It contains far more oxygen than the organic bases or alkaloids. We observe that quinine, and cinchonine, morphia, codeine, strychnia, and brucia, which are respectively so nearly alike in composition, if they do not produce absolutely the same effect, yet resemble each other in their action more than those which differ more widely in composition. We find that their energy of action diminishes as the amount of oxygen they contain increases, (as in the case of narcotine;) and that, strictly speaking, no one of them can be entirely replaced by another. There cannot be a more decisive proof of the nature of their action than this last



fact; it must stand in the closest relation to their composition. If these compounds, in point of fact, are capable of taking a share in the formation or in the alteration of the qualities of brain and nervous matter, their action on the healthy as well as diseased organism admits of a surprisingly simple explanation. If we are not tempted to deny that the chief constituent of soup may be applied to a purpose corresponding to its composition in the human body, or that the organic constituent of bones may be so employed in the body of the dog, although that substance (gelatine in both cases) is absolutely incapable of yielding blood; if, therefore, nitrogenized compounds, totally different from the compounds of proteine, may be employed for purposes corresponding to their composition, we may thence conclude that a product of vegetable life, also different from proteine, but similar to a constituent of the animal body, may be employed by the organism in the same way, and for the same purpose, as the natural product originally formed by the vital energy of the animal organs—and that, indeed, from a vegetable substance.” \* \* \* \* \*

“94. Thus, as we may say, in a certain sense, of caffeine and theine, and asparagine, &c., as well as of the non-azotized elements of food, that they are food for the liver—since they contain the elements, by the presence of which that organ is enabled to perform its functions; so we may consider these nitrogenized compounds, so remarkable for their action on the brain and on the substance of the organs of motion, as elements of food for the organs as yet unknown, which are destined for the metamorphosis of the constituents of the blood into nervous substance and brain. Such organs there must be in the animal body; and if, in the diseased state, an abnormal process of production or transformation of the constituents of cerebral and nervous matter has been established; if, in the organs intended for this purpose, the power of forming that matter out of the constituents of blood, or the power of resisting an abnormal degree of activity in its decomposition or transformation has been diminished, then, in a chemical sense, there is no objection to the opinion that substances of a composition analogous to that of nervous and cerebral matter, and consequently adapted to form that matter, may be employed instead of the substances produced from the blood, either to furnish the necessary resistance or to restore the normal condition.”

It would hence appear, that the sulphate of quinine, in its medical virtues and chemical composition, is very analogous to morphia; that, like opium, too, along with its sedative, it possesses stimulating properties, exciting the motion of the blood—as all will admit who have used it as a stimulant—(that is, tonic, permanent stimulus,) increasing the frequency of the pulse, although, at the same time, diminishing its force.

Now, as regards its exhibition in the tonic and atonic states of the system, it has been shown that it may be safely given in the former, although heretofore regarded as at variance with sound principles of practice. The use of both opium and quinine has been sanctioned by the profession at large in the low forms of fever; and they have been most liberally used in the atonic states of the system, when the powers of life were in a depressed condition.

This apparent inconsistency of giving these remedies in such opposite conditions of the system, is satisfactorily explained when we recollect that, as sedatives, they both act directly on the nervous power, diminishing the sensibility, irritability, and mobility of the system; thus allaying pain, inordinate action, and restlessness. Hence they may be used in a great variety of diseases. A remedy possessing the power of diminishing sensibility and allaying inordinate action when given in large doses, may yet (as opium) act as a stimulant in small and frequently repeated doses; in the former case, highly beneficial when the powers of life are in an exalted condition; in the latter, proving useful to sustain the system and obtund sensibility.

But whatever may be its action, I can safely aver that I never have seen any injurious effects or unpleasant symptoms supervene in any state of the system; and I have given it in every possible condition, and have so constantly witnessed such surprising remedial effects follow its exhibition, as to justify me in regarding the sulphate of quinine almost as an antidote to the cause originating fever: and, as with antidotes, the amount required will be in exact ratio to

the quantity of poison (in this case malaria) imbibed. At the "*Hôpital des Enfants*," at Paris, M. Guersant employed the sulphate of quinine, after amputating both lower extremities, for the traumatic fever, and with effect.—(*London Lancet*, from *Gazette des Hôpitaux*, March 14; *Philadelphia Medical Examiner*, August 5th, 1843.) I have myself seen it allay febrile action in pneumonia, &c.

Professor Liebig says: "93. \* \* \* \* It is singular that we find medicinal agencies all dependent on certain matters, which differ in composition; and if, by the introduction of a substance, certain abnormal conditions are rendered normal, it will be impossible to reject the opinion that this phenomenon depends on a change in the constituents of the diseased organism; a change in which the elements of the remedy take a share—a share similar to that which the vegetable elements of the food have taken in the formation of fat, of membranes, of the saliva, of the seminal fluid," &c., &c. How beautifully all this applies to the action of quinine in fever! Now, the cause of fever acting on the human organization, may cause therein the change, waste, or transformation of some element, which is supplied in the quinine when given. And as the cause of fever and the quinine both act immediately upon the nervous system, it must be in that part of the organization we are to search for the explanation of fever. And, in truth, it does seem to consist in some modification of the nervous system, caused by the malaria creating a change of function or structure, or preternatural waste therein, as is seen to occur in other tissues during the progress of fever, and which are only remedied by the exhibition of articles containing the appropriate elements for the formation of such tissues. For instance: as gelatine in soup is supposed to act, in convalescence, in restoring the waste in cellular tissue, cartilage, &c.; so quinine may be supposed to act as food, supplying waste or change in organism produced by fever in the nervous tissue.

I have suggested that it is in this tissue we are to look for and find the proximate cause of fever, inasmuch as the *modus operandi* of the great febrifuge is direct on the brain and nerves; and inasmuch as in virtue of its composition it may be termed food for the brain and nerves, as caffeine, and theine, and asparagine are so called for the liver; and further, as the action of the malaria, or rather of both *koino* and *idio-miasmata* is direct upon the brain and nerves. All, then, that has been said in relation to the sulphate of quinine would seem to confirm this opinion; and an examination of the nature of fever will, I think, have a like tendency.

"That derangement of the nervous system constitutes the initial link in the chain of morbid actions which occur in the development of fever, cannot be doubted. The mental and muscular languor, rigors, pains in the back, limbs, and joints, irritability and fickleness of temper, morbid sensibility to low temperature, confusion and dullness of the intellectual powers, which so universally usher in febrile diseases, afford unequivocal evidence of pervading derangement of the nervous system." Or, in other words, they indicate lesion of the function of innervation. Now, as this function (it is admitted) presides over those of calorification, secretion, circulation, and absorption, we cannot conceive it to suffer disorder or derangement, without the others being immediately, and invariably, more or less implicated; and such is the fact, for we constantly see in fever alteration of the animal temperature, and general disorder of the functions. Again, as long as this function (innervation) is carried on in a healthy manner, or preserves its integrity, those dependent on it, or over which it presides, will also maintain theirs. This is a state of health.

Fear, grief, and joy—in short, all the passions act by the impression they make upon the brain and nerves; and each has been known to cause immediate death. The cause of fever has also been known, in the severe congestive forms, to deprive the patient instantly of all sensation and motion, and, at times, to cause immediate and almost instantaneous death. How can any other view of the pathology of fever than the nervous explain such phenomena? Surely death in such cases could not have been the result of inflammation, as this occupies time to run its course! The rush of blood to the cheeks, as seen in blushing; the erection of the penis; and the determinations of blood to the head, in anger, are examples of congestions occurring suddenly, and



almost instantly, from the nervous influence; and no appearance in the early stage of fever is more universal than these irregular distributions of the blood, evidently arising from the same cause—nervous influence.

Symptomatic fever, or fever dependent on local inflammation, presents the same phenomena as idiopathic; and, as "*ubi irritatio, ibi fluxus*," is a maxim, it will be admitted that even in inflammation the nerves are first implicated, and the action of the vascular system is secondary. Certainly, if the sensibility and irritability of the part be not altered, there will be no inflammation; and they exist only where the brain and nerves are present. But in inflammation, as in fever, the function of the vascular system is deranged, and, consequently, that of innervation, primarily, as it presides over the other.

The cause of fever acts through the impression made upon the organs concerned in innervation—probably by the malaria being taken into the current of the circulation in the lungs. However this may be, it is evident its first effects are manifested in the nervous system, and it produces impressions on this system, more or less lasting, and more or less injurious, according to its amount and concentration—as a poison acts, precisely; and as with a poison (corrosive sublimate, for instance) its injurious effects cease with the antidote, although, should the poison have excited inflammation previous to the exhibition of the antidote, this latter will have no effect in curing the inflammation, only acting upon the poison and arresting its effects; leaving whatever inflammation may have been excited up to the time of its action. But, as suggested, in all inflammation whatever, the function of innervation is more or less implicated; and, consequently, quinine, opium, and all sedative remedies, have a direct tendency to favor its cure; at least, such I have found to be the fact. Fever, in most cases, yields, only after the lapse of a very considerable time, to antiphlogistic remedies; but when to these are added quinine, opium, and other sedative remedies, it yields readily (generally in a few hours) in nearly all cases—certainly in all cases I have seen—when given in the early stages.

In idiopathic fever there is great proneness to congestions and inflammations, as long as the fever is suffered to run its course; and when these occur, they greatly modify it. Now, cases of traumatic fever, pneumonia, &c., differ from idiopathic fever; and, although presenting the same great general phenomena, are yet different in their condition and course. In idiopathic fever, the malaria induces lesion in the function of innervation; in pneumonia and traumatic fever, the organic lesion is present from the commencement of the general phenomena; in other words, the difference between idiopathic and symptomatic fever is, that in the former the cause acts on the general nervous system, (the cerebro-spinal and ganglionic departments,) and all the inflammations that occur are predominantly modified by the peculiar impression made on this system—cerebro-spinal, or ganglionic; and in the latter, the cause acts locally on the sensibility or irritability of the part—thus causing local inflammation, and inducing a state most closely resembling the former, by the local impression being reflected upon the general system, yet differing in this: that in the former, the nervous, and in the latter, the inflammatory condition predominates; and hence it is, that idiopathic epidemic fevers are found one year to be congestive, and another inflammatory, according as the function of innervation is more or less deeply implicated; and such, in a great measure, is the cause of the difference observed in the north and the south. The nervous system, in the latter, suffers most; and we know that in those cases inducing sudden death this same function (innervation) is most deeply implicated; and that in synocha the vascular is predominantly deranged; and in typhus, the nervous. In all, *lesion of innervation is the primary condition, without which fever cannot exist*. "It is in the regular relation of these two great systems (nervous and vascular) and of their functions that health and life consist. It is from derangement of their harmony that disease and death result." (*Beclard*.)

The result, then, may be expressed thus: that, inasmuch as the functions of calorification, secretion, circulation, and absorption, are all under the influence and control of the function of innervation, (or, in other words, under the control of the brain and nerves,) it follows, that when disorder exists in this last function, the others become more or less implicated, in direct ratio with



such disorder. As, also, in the chain of sequences constituting fever, all these functions are prominently and constantly disordered; as the primary link is lesion of function in the nervous system; as all the other phenomena observed in fever are subsequent to this; as the effects of malaria are first manifested on the nervous system, it would seem that the true seat of the proximate cause of fever is in this system. And when we recollect, and add to this, that the action of quinine is admitted to be direct upon the brain and nerves; that it is a sedative, possessing the power to cut short the paroxysm, and arrest the farther progress of the fever, the conclusion is inevitable, that the proximate cause of fever consists in some modification of the brain and nerves, and that either the cerebro-spinal or ganglionic divisions may suffer most.

Now, dissections fail to trace the peculiar condition of the brain in epilepsy, &c.; yet no one doubts its nervous origin. The difficulty and impossibility of demonstrating the peculiar condition of the brain in those who die of nervous diseases, with what has been said in reference to fever, explains the great difficulty, and, taken together, may probably lift the veil that has enveloped the subject of fever. There is one thing certain: all the dissections that have been made of those who have died of fever, have only served to make us acquainted with the results—pathological phenomena—that occur during the course of fever, but have not revealed the slightest glimpse of its intimate nature, or primary and essential cause.

But, let all this be as it may: since I have adopted my practice to such view of fever, endeavoring not only to counteract the morbid state of the vascular system by antiphlogistics, *but as the first indication to remedy that of the nervous system also*, I have not had a single opportunity to make a post-mortem examination of the body of a single fever patient; for in my practice (and it has been pretty extensive—not confined to the sick of the army alone) not one case has proved fatal. I have tried all modes of practice, and neither mercury nor the bleeding and refrigerant plan will arrest a single severe case. The following plan has proved successful in all subjects, from infants to women during the last month of pregnancy, in Florida and Arkansas, and some few cases in Maryland—in the field and in garrison:

In treating fever, as well as inflammation, our success will be infinitely greatest when proper attention is paid to the two great systems implicated, and remedies appropriate to the peculiar state and condition of each system are exhibited. It has been seen that these two great systems are the nervous and the vascular. In the former, derangement and excitement would seem to show the action of the cause to be that of a morbid irritant; it may be inferred, hence, as the sensibility and irritability are increased to a great degree, the action of remedies possessing the powers of diminishing and allaying them (*viz*: sedatives) should be first invoked, to quiet and regulate the nervous system; and with a view to counteract and restore the condition of the vascular system, general and local bleeding, cathartics, and refrigerants may be necessary. Now it may be said, where, in congestive fever, the patient is in a state of insensibility and immobility, that the cause of the fever has not acted as an irritant, but that the impression it has made is one of sedation (for we see the animal energies are diminished). That this is not the case, is seen in the fact that sedatives, such as opium, camphor, and quinine, all in large doses, are the most certain remedies we can employ to restore reaction. It is true, a patient in such a state of fever bears often a strong resemblance to a person laboring under the effects of an overdose of opium; but that the two states or conditions are totally different, must be admitted, from the evidence of the effects of the remedy. In the latter case, death would inevitably result from a full large dose of opium; in the former, it is the surest means of restoring the patient to health. Now, sedatives, as cathartics, &c., do not all possess exactly the same virtues, or act in precisely the same manner. The sulphate of quinine is the sedative I employ in fever; as before stated, it has the advantage of opium, in not possessing narcotic properties, and can, therefore, be safely given to whatever extent may be necessary.

The first indication in the treatment is to cut short the paroxysm, and arrest the further progress of the fever; and, with this view, from twenty to thirty grains of the sulphate of quinine is the remedy I administer first. As has been stated, blood-letting favors the action of the

quinine, whenever it is required; and this is the only condition I regard previous to the exhibition of the remedy. Whenever violent local determinations are present, (especially of the head,) bleed to the relief of the symptoms, and immediately give the quinine, simply diffused in half a wine-glass full of cold water. Where there is much nausea and vomiting, combine it with from thirty to sixty drops of laudanum. If the remedy cannot be retained on the stomach, it must be given, in two or three times the quantity, by the rectum. I have given from forty to sixty and eighty grains in this way, dissolved in as little water as possible, by means of sulphuric acid, and mixed with a solution of starch, not to exceed two or three ounces. As this is the remedy to be relied on to arrest the fever, it must be administered either by the stomach, skin, or rectum. Should diarrhœa or dysentery be present, give, with the quinine, forty or sixty drops of laudanum, or from ten to fifteen grains of Dover's powder. Should it be otherwise, any laxative will answer, as castor-oil, calcined magnesia, or this latter combined with cream of tartar, or Epsom salts, will, in mild cases of fever, be found sufficient; but in all severe forms, I employ one or two free mercurial cathartics in the commencement of the disease, and, if necessary, follow up their use with gamboge, and even croton-oil, according to the effect desired, and the difficulty of producing it. For instance: in a severe case of congestive fever, I have only succeeded in inducing one or two alvine evacuations after having given, in a few hours, several twenty-grain doses of calomel, fifteen grains of gamboge, and sixteen drops of good croton-oil, (in addition to eight drops of croton-oil I had regarded as bad; because, when given to this same patient in a dose of four drops, and repeated once, it had failed.) After all these had acted on the bowels, the patient recovered her senses; and, the day following, when the function of the brain was free, a single dose of castor-oil operated freely three or four times. The indications are, then, 1st. To moderate the febrile reaction; 2d. To arrest the fever; and 3d. To obviate and remedy the various local congestions and inflammations that occur. To fulfil the first, bleeding, refrigerants, and laxatives are required; for the second, quinine and opium; and the third, local bleeding and counter-irritants. But, in the great majority of cases, quinine, with mild laxatives and cooling drinks, will be all-sufficient.

In the congestive form, nothing is to be depended on but opium, camphor, and quinine, to induce reaction; and the latter, in full doses, often repeated, can alone be trusted to prevent the recurrence of fever. Give mercurials and brisk cathartics to move the bowels, if necessary. Give, during the cold stage, a table-spoonful of camphor-mixture, with a few drops of laudanum; or give full doses of opium, and follow with camphor-mixture, and, at the same time, quinine in large doses—say from twenty to eighty grains, and repeat if necessary. The quantity it will require cannot be told. Give it, during the paroxysm, at least in twenty-grain doses every hour until the fever subsides. Blisters may be applied during the cold stage; but they rarely do good until reaction is established, when they make their full impression, and serve to keep up irritation of the extremities, and thus have a tendency to equalize the circulation.

The quinine at times appears to fail in arresting the paroxysm of fever. In many cases, after two ten-grain doses had been given, the fever appeared to have maintained its course; and I should have repeated it until the fever stopped, only the remedy was very scarce. I therefore, in all such cases, withheld the third dose—after having given ten grains at the end of a paroxysm, and ten grains three or four hours before—and in a great majority of cases no more was required. This should be remembered, as it has a great tendency to prevent any person, who is not fully aware of it, from coming to a correct conclusion in regard to the action of the sulphate of quinine; but let another dose, and another, be given, if any doubt exist.

Many intermittents recur every seventh, fourteenth, twenty-first, and twenty-eighth day, with as much regularity as a quotidian or tertian, and sometimes assume the former, and at others the latter type. They should be anticipated for one or two periods of recurrence by the sulphate of quinine—ten grains the night before, and ten grains the morning of the expected attack. If costiveness prevails, give laxatives; if diarrhœa or dysentery, opium is the remedy.



Emetics are sometimes highly useful in the cases of recurring intermittents previous to the exhibition of the quinine, and should be tried.

During the recent expedition to the prairies, under Captain Steen, the treatment I pursued was very simple and successful in every case. It was simply to administer ten grains of the sulphate at bed-time, to be followed by a like quantity the ensuing morning; if diarrhœa or dysentery existed, laudanum was combined with each dose; if otherwise, castor-oil or rhubarb and aloes were the only means made use of. The patient generally rode one or two days in the wagons, but in most cases mounted his horse the second day; and it but seldom happened that any had to ride in the wagon over two days, and in only two or three cases had the remedy to be repeated.

In my report, I stated six sick men had been sent back to Fort Gibson. This occurred from want of a wagon for the sick. It is next to impossible for a man laboring under high febrile excitement to ride on horseback, and it must certainly prove injurious. They were, therefore, sent back. All recovered. As soon as I had room in the wagons for a man to lie on the rough load, even, there was no difficulty. I had made application to the commanding officer for a wagon for the sick, but he declined sending one.

I have the honor to be, very respectfully, your obedient servant,

CHARLES McCORMICK,  
*Assistant Surgeon U. S. Army.*

THOMAS LAWSON, M. D.,  
*Surgeon General U. S. A., Washington, D. C.*

#### REPORT OF ASSISTANT SURGEON JOSEPH H. BAILEY.

I have been tolerably familiar with the use of quinine for the last eighteen years. At first, the exorbitant price of the remedy, together with the cautions promulgated relative to its use, prevented myself, as well as many others, from prescribing it freely: gradually the fears of its injurious effects wore off, and, the price becoming reduced, the more liberal use became common. Up to the commencement of the year 1835, I had witnessed its effects only in diseases of a northern climate; since then, only in the southern and southwestern part of the United States, where I have administered it in many thousand cases.

The sulphate is the only preparation of quinine with which I have had any experience; of this, there has been but slight difference in the several parcels—all having been pure, or nearly so; which conclusion I formed from its appearance, weight, taste, effects, and a few of the more common tests.

My supplies during the last eight years have been obtained mostly from the army medical purveyor in New York, and small parcels from western merchants who purchased in New York, New Orleans, and St. Louis. I have administered it in doses from  $\frac{1}{2}$  to 60 grains, and all intermediate quantities. The ordinary dose has been from 2 to 5 grains. In small or large quantities, I consider it a powerful tonic. But in miasmatic fevers, I think its principal virtues arise from its qualities as an antidote, neutralizing miasmatic poison. In large doses of 15, 20, and 30 grains, or more, in congestion or collapse, it is stimulant and tonic, supporting the sinking powers of life in a remarkable degree. In inflammatory diseases, either in large or small doses, it will aggravate the symptoms. In fevers, where the system has been reduced by the debilitating effects of long-continued solar heat, chronic disease, active treatment, or any other cause, it will prove sedative; but I have not witnessed this effect, except where other appropriate stimulants and tonics would have produced similar results.

In the spring and early part of the summer, quinine is usually not admissible, except after reducing treatment, or when previous disease or other cause has lessened the vital powers; but



in autumn, the relaxing effects of the season having already lessened the powers of the system, it may often be administered with benefit during the excitement of fever, even without previous evacuating treatment. Local congestions and inflammations may be treated subsequently.

In active inflammatory diseases, (pneumonia, pleuritis, &c.,) any persons may soon satisfy themselves of the injurious effects of quinine. But there are local inflammatory affections of an intermittent character, the evidence of their existence continuing only during the excitement of a paroxysm of fever, and disappearing with the establishment of the sweating stage. During and after cold fall rains, pleurisy of this sort is not unfrequent in the southwestern country, and is often cured, with its accompanying paroxysmal fever, by administering quinine. Throughout the whole southwestern country, dysentery and diarrhoea are common diseases, and were so before the use of quinine became general. Is it not probable that examinations of the abdominal viscera have been more carefully made of late, the attention of the medical department of the army having been called particularly to that subject by a circular from the Surgeon General's office? And may not this measurably account for the increase of disease of the intestinal canal reported to your department? I cannot, however, doubt the indiscriminate use of quinine, especially in large doses, not preceded by evacuating treatment, must increase, if not produce, visceral obstructions, and may account for many lesions of the intestinal canal of those who have died of southern fevers.

The liver being supplied with blood in a devious way, seems to be placed mostly beyond the reach of vascular disturbances, and, as might reasonably be supposed, will usually be found free from disease in southern fevers, except where it has been goaded with mercury.

The spleen being a highly vascular organ, suffers, as might be supposed, more than any other in paroxysmal fever. Engorgement and enlargement of the spleen is very common, and is usually connected with a debilitated state of the system, not inappropriately named splenic cachexia; and, being a disease of debility, the tonic quinine naturally presents itself as a remedy. Its steady use, with firm pressure over the splenic region, combined with general invigorating treatment, will rarely fail to effect a cure of chronic enlargement of the spleen. I would by no means recommend quinine in acute splenitis, should it ever be found to exist.

Many hundred cases of autumnal intermittents have been treated by me in the following manner, with invariable success: I prescribe an emetic of ipecac and antimony, and, during the following intermission, sixteen grains of quinine, in doses of four grains, at short intervals. Any existing derangement of the bowels may be subsequently attended to. In the remittent or continued form of fever, venesection is frequently practised with great benefit; after which, a gentle emetic will usually produce an intermission or remission, when I administer from sixteen to twenty grains of quinine, either at once or in divided doses, as I may have reason to expect the intermission will be of shorter or longer duration; always preferring the administration of this, and all other powerful remedies, in moderate doses, unless the urgency of the case demand a different course. In the congestive form of fever, when the skin is cold, the pulse nearly or quite imperceptible at the wrist, and the powers of life rapidly declining, I administer from thirty to sixty grains at once; and should no effect be produced, repeat the dose at the expiration of two hours. Before the use of quinine in large doses was practised in congestive fever (general congestion), the disease was almost always fatal. Now we may, with much certainty, calculate on a favorable result. Quinine cannot be said to act as a sedative in congestive disease, when a large dose of sedative medicine might be calculated to produce a fatal result.

There is a vast difference between two forms of disease called congestive fever in the southern and southwestern country. A brief description of each will explain the difference of symptoms, treatment, and result of these diseases, though unlike, named the same: One form of real congestive disease, or congestive fever, as I have seen it, is intermittent—the first, second, and frequently the third paroxysms running their course without any extraordinary symptoms. The cold stage of the congestive paroxysm is protracted, and reaction does not occur. The skin becomes moist; the countenance livid and sunken; the respiration hurried and laborious; the pulse

ceases at the wrist, or becomes very feeble; the vital powers sink rapidly; the voice becomes faint and whining; and the patient soon sinks into a fatal lethargy. Quinine, if administered with sufficient freedom, and before the loss of sensation, will almost certainly save the patient. This same stage of collapse or congestion is not uncommon in the bilious fevers of this climate, and occurs most frequently on the third or fourth day of the disease. Provided the violence of the previous fever has been checked by active treatment, and no important organ allowed to suffer material lesion, quinine will be found equally efficacious if boldly administered. But quantity must be disregarded. The sinking powers of life must be speedily bolstered, or the patient is lost. No remedy will compare with large doses of quinine under such circumstances.

The other form of congestive fever is where large and important organs, especially the brain and stomach, are seriously affected, and supposed to be in a state of congestion. Although no sinking or general congestion or collapse comes on, it is called congestive fever. The term *collapse* would be better for the former condition, and *local congestive fever*, the latter. It was this local congestive fever which prevailed, causing such dreadful mortality among the troops on the prairies west of, and at Fort Gibson, in the fall of 1834.

In the summer of 1836, six companies of the 7th infantry, and three companies of dragoons from Fort Gibson, then encamped near Fort Towson, were ordered to cross the country to the Indian towns on the Sabine river, and from thence to Nacogdoches (Texas). We set out about the middle of July. The country between Red river and the Sabine is intersected by numerous streams with low banks, bordered by wide bottoms from one-half to four miles in width. These bottoms had been recently overflowed, and the waters had just retired within their banks when we marched through the country. The bottoms were wet and miry, rendering them difficult to cross. The troops were much fatigued with cutting a road, bridging streams, causewaying swampy places, hauling out the wagons from low and boggy places, and encountering many other difficulties usual in similar situations. The weather was excessively hot and sultry. After laboring hard through the day, we were often obliged to lie down on the wet and muddy banks of a stream, surrounded by immense masses of decaying vegetable substances; all which, doubtless, had their effect in preparing the system for disease.

We reached Nacogdoches early in August, when the inhabitants were suffering from an epidemic fever; many of these inhabitants, having fled from home in fear of hostile Indians and the Mexican army, were destitute of the necessities of life. The fever soon appeared in our camp, as might have been expected, fit subjects as we were from previous exposure to heat, fatigue, and miasmatic atmosphere, and in the course of the season not more than five or six of the whole command escaped an attack. At one time I had over one hundred cases. This fever was called congestive by many, and was said, by officers who had witnessed both, to be like the Gibson fever of 1834. The attacks were usually sudden and violent. The first symptoms to which my attention was usually called, were intense pain and heat of the head, constant thirst, nausea and vomiting, and coldness of the extremities. On inquiry, I often found these symptoms had been preceded by coldness or shivering, general uneasiness, or, in the language of the patients, aching of the bones.

The lancet was often used, and cupping the temples almost invariably resorted to. A steady stream of cold water moderated the heat of the head, at the same time the feet were plunged in a mustard-bath as hot as could be borne. The thirst was allayed by cold acid drinks, (vinegar or lime-juice and water.) The bowels were emptied by an injection or laxative—never purged. In from 12 to 40 hours, an intermission or remission followed, when I administered four grains of quinine every half-hour, until sixteen or twenty grains were taken. The subsequent paroxysm was milder, the second still more so, and the third of scarcely any consequence.

In many instances no paroxysm followed this treatment. This was the boldest practice in quinine then known to me. No case terminated fatally, as far as I now recollect.

Among the inhabitants of Nacogdoches, the disease was treated after the manner most approved in what is termed bilious fever: 3 ss. or 3 j doses of calomel were administered every 3,



4, or 6 hours, until the patient was purged. The Mexicans did little or nothing. Both were alike unfortunate. One-third of the cases of any severity terminated fatally; the patient usually sinking the third or fourth day of the disease.

The cases occurring among the inhabitants were attended with no peculiar symptoms, many of whom came under my treatment, and not one died. The bilious or local congestive fever will always present the intermissions or remissions above alluded to. These were watched with much interest formerly by the doctors, as from that time the disease assumed a milder or more aggravated form.

I consider the diseases of Florida not unlike those of the southwestern frontier. Intermittent and continued fevers are common, and not unfrequently local and general congestions occur; and similar treatment to that adopted above will be proper. During the excitement of fever, to moderate vascular action, and, as soon as an intermission or remission occurs, to neutralize miasmatic poison, and fortify the system with quinine, will usually be followed by a cure.

Chronic diarrhœa and dysentery are common, and usually depend on ulcerations in the intestinal canal. For these, sulphate of copper seems the best remedy: one-eighth of a grain, with one grain of rhubarb and half a grain of opium, in pill, thrice daily, was my prescription, and rarely failed to effect a cure. Sometimes, to reach ulcerations in the lower part of the large intestines, injections were necessary. These were prepared as follows: Sulphate of copper, grs. vj, tinct. opii ʒj, water ʒiv. I thought diarrhœa usually depended on lesions of the small, and dysentery, of the large intestines.

Convalescence after disease in Florida was generally more tardy than in any other country in which I have practised. Debilitated persons were usually much benefited by the use of creosote: one drop in sugar and mucilage, twice daily, rarely failed to improve the appetite and increase the strength of the patient.

To my surprise, rheumatism was more common and more difficult to cure than in more northern latitudes.

J. H. BAILEY, *Assistant Surgeon U. S. Army.*

FORT TOWSON, *October 14th, 1843.*

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REPORT OF ASSISTANT SURGEON DAVID C. DE LEON.

PHILADELPHIA, *September 1, 1843.*

SIR: I have the honor to acknowledge the receipt of your circular dated August 14, 1843; and will first answer the interrogatories therein propounded, and then offer my views in support of the opinions advanced.

1st. As regards my experience in the use of quinine, I would state, that a long residence in a southern climate, both before and since entering the service, has given me an opportunity of seeing the diseases incidental to such latitudes, and of comparing particularly the relative advantages derived from the administration of quinine in large and small doses, both from my own personal experience, and from noticing the treatment pursued by others.

2d. The preparation of quinine used by me has been the sulphate; and I am convinced that most of it has been pure, being always obtained from the best sources.

3d. The sources from which most of my quinine has been obtained, were from various medical purveyors, both in and out of Florida, and, when purchased by myself, from the best apothecaries.

4th. The doses of quinine which I have latterly used as an anti-periodic, have been ten grains (grs. x) as a minimum dose, and forty grains (grs. xl) as a maximum dose; of course, to answer other indications, I have used it in other doses and in various combinations. The dose by enema, or endermically, in relative proportion.



5th. The diseases in which I have employed it have been very numerous; some of the principal were, the various types of fevers (intermittent, remittent, and congestive,) neuralgia, rheumatism, chlorosis, dropsies, certain varieties of scrofula, dyspepsia, passive hemorrhages, diarrhoea, &c. I have administered it in the tonic and atonic states of the system: and, in answer to the question whether injurious effects, or unpleasant symptoms, did not less frequently supervene in the adynamic state than when the powers of life were in an exalted condition, I would remark, that when the nervous system is functionally disturbed, producing an exalted state of the powers of life by increasing the circulation, so far from any unpleasant effects following the administration of this remedy, it relieves all the more urgent symptoms, by producing an equilibrium of nervous power, and in that way removes visceral congestions, enabling other remedies to have their effects.

6th. As regards the *modus operandi* of this medicine, as an anti-periodic, in the doses stated, I consider its primary action entirely sedative; and that the system only acquires tone from its administration, by the morbid catenation which produced disease being overcome by its sedative effects. When used in small doses, and to answer other indications, its action is different. Its action, then, in the same state of the system, seems to depend upon the dose. A small dose given in the paroxysm of a fever acts as a stimulant; a large dose in the same condition acts as a sedative. A small dose given to a patient in a debilitated state acts as a tonic, and increases the tone of the muscular system; a medium dose, in a state of health, acts as a stimulant.

7th. As regards the supervention of diseases of the bowels from its use, my experience has been totally the reverse. The proportion of diarrhoea, dysentery, and other sequelæ of the fevers of warm climates, since the exhibition of large doses of quinine, seems to me to have materially diminished; the disease being checked before any of the viscera suffer lesion enough to become diseased in a chronic form; since it is from continued repetition of congestion that a chronic abnormal condition of the stomach, bowels, liver, spleen, &c., takes place.

8th. From a location in various parts of Florida—on the Atlantic coast, in the interior, and on the Gulf side of the peninsula—I am inclined to believe that the acute diseases incidental to this climate are similar to those in other parts of the southern country—intermittent, remittent, and congestive fevers; the various grades dependent on locality and season. The congestive fevers prevalent at Port Leon, Tallahassee, and its vicinity, inhabited by planters, were the most malignant type of disease seen by me while in that region. It has been correctly observed, that the paradise of vegetables is the grave of the human species; and I am of opinion that the malignancy of the disease stated, is occasioned by the habit of the planters of building their residences in the midst of cultivated lands, and thereby being constantly exposed to the effects of the malaria generated by the continual decay of vegetable matter. As the acute, and more especially chronic, diseases of the liver and spleen are in most instances the effects of protracted fever, any remedial means that abridges the primary disease must have a tendency to prevent such sequelæ; therefore, I consider quinine has the effect of preventing these sequelæ. When the diseases supervene, I have found it the most effectual remedy, both alone and in combination with other means. The chronic diseases incidental to the climate are extremely unmanageable, from the fact of the predisposing causes remaining in full force, and from the relaxing effects of the climate acting upon the body enfeebled by disease, preventing the sanative efforts of the *vis medicatrix nature*; which is a further argument to endeavor to prevent these sequelæ by an early resort to quinine, which cuts short the primary disease.

Having endeavored as succinctly as possible to answer the interrogatories propounded, I will now enter into detail as regards the reasons upon which my opinions are based, drawn from observation and physiological facts. In sustaining the views advanced of the therapeutic effects of quinine, it will be necessary to enter somewhat into detail concerning the various grades of fever where its application seems most advantageous. In southern climates, fever is the *fons et origo* of most of the diseases from which the inhabitants suffer. By far the most common variety, in the generality of locations, is the intermittent type. This type, from its symptoms, most

particularly appears to depend upon functional injury of the nervous system; and the increased circulation which characterizes fever is the effect, and not the cause. The whole of the initial symptoms which usher in the disease would seem to prove this—the malaise, pain along the spinal column, and the chill: and when the fever supervenes, it is most probable that the increased action of the heart is produced more through the agency of the nerves than by the mechanical impulse of the increased quantity of blood determined to it. Why this periodicity of nervous disturbance should occur, the same causes remaining in force, is hard to determine. One way in which it may be accounted for, is from analogy, as in a healthy state the periodicity of many vital phenomena is constantly observed. That organic visceral derangements are not the cause of this fever, would seem to be proved by the perfect state of health and healthy action of all the organs which sometimes precedes an attack, and also by the feeling of health that the patient often experiences between the intervals of a paroxysm. We might imagine that lesion of a nerve would show itself only at intervals, from the fact that foreign bodies have been found imbedded in nerves, and the diseased phenomena exhibiting themselves periodically. But when any organ necessary to nutrition is diseased, the effects of its pathological condition are manifested constantly, till the morbid state is removed. In gastritis and enteritis, as long as the disease remains, the symptoms are present.

That the mucous membrane of the stomach should be considered the seat of disease in fever, is not surprising, from the sympathy that exists between the various parts of the nervous system. The effect is taken for the cause. In diseases where this viscus is primarily affected, the train of nervous symptoms, chills, &c., are present: and these are the effects of the primary disease. In each case the primary disease is to be attacked; and although in the latter it may be necessary to relieve the nervous system first, still the remedies must be afterwards applied which act upon the organ affected. From these views entertained by me, the treatment I recommend appears manifestly indicated. Sedation of the nervous system by quinine would be one of the first steps to be achieved. The organs sympathetically affected must be also attended to. If there is engorgement of the liver, or functional torpor, calomel must be given, combined with quinine, to overcome congestion. If gastritis is present, general blood-letting, if it is severe, and cupping, either alone, or in combination with it, or leeches, must be resorted to, and ice administered. If the bowels are in a torpid state, cathartics and enemata are the indications. If the brain is the seat of congestion, cups or leeches to the temples or nape of the neck, with ice-water to the head; or general bleeding, if the congestion is very great; and stimulating enemata, together with sinapisms to the extremities, as revulsive agents. The host of diaphoretics usually administered, I consider as very slight adjuvants, and often productive of injury, or delay of more vigorous treatment. A free blood-letting, or quinine, is a more certain means of producing this effect, and at the same time answers other indications. The administration of antimonial powders, acetate of ammonia, &c., is only expectant treatment.

I have stated that I consider the number of cases in which sequelæ follow intermittent fever has been materially diminished since the introduction of large doses of quinine—especially enlargements of the spleen. The spleen, from its particular structure allowing the intromission of blood, and from the quantity of this fluid which it ordinarily contains, would seem to be more particularly obnoxious to passive distension than to congestion, when the blood is determined from the surface to the centre. The longer, therefore, an intermittent continues, the greater tolerance of this distension must take place, and chronic enlargement of the spleen is the result. Although this is not by any means the most important of the sequelæ of fevers, it is one that we ought to try and prevent.

The strongest argument that large doses of quinine do not produce this enlargement, is, that in the districts of country in Georgia and the Carolinas where intermittents prevail most extensively, enlarged spleen is very general; the rich and the poor are both affected with it. In these regions quinine is not given in large doses; when given, the doses are small, and a



number of the poorer part of the population do not use it in any form. Having thus given the indications in intermittents, I will now make a few observations relative to the remittents. It is more probable that the remittent type of fever is produced by primary organic disease than the fever just described. The whole train of symptoms would indicate that there was a different pathological cause: the continuity of the paroxysm, and no healthy intervals of intermission existing, the morbid phenomena always being present. We may readily, then, conclude that from the effects of the climate, the stomach, liver, or intestines, in this disease, may become in a morbid condition. The liver generally is the organ diseased: and the nervous system, in the exacerbation of the paroxysm, is sympathetically affected. Still, the last symptom must be overcome, before the remedies necessary to relieve the suffering organ will have their effect. In other words, the nervous resistance to the effects of therapeutic agents must be combated first. Quinine, therefore, in combination with calomel, is indicated. It has two effects: relieving the nervous system, and, by that means, the sufferings of the patient; and at the same time enabling the calomel to have its specific action. In numerous cases that have come under my observation, where there was great heat of skin, full hard pulse, furred black-looking tongue, and headache, with nausea and gastric irritability, the exhibition of quinine grs. xx, calomel grs. x, in one dose, has relieved all the more urgent symptoms; the skin has become moist, the pulse reduced in frequency and hardness, and the head and stomach relieved. Then, the exhibition of quinine in doses of ten or twenty grains, at intervals of two, four, or six hours, according to circumstances, has removed the disease. Purgatives, of course, are indicated under the same circumstances as in intermittents; also general and topical blood-letting, revulsives, &c.; but, in the generality of these fevers, except in the more violent cases, blood-letting, with the exception of topical, to remove congestion, is not necessary. In southern climates there is not that tolerance of frequent depletion that is met with in northern latitudes; and, therefore, when it can be dispensed with, it is better to do so. Since the exhibition of quinine in large doses, I have not found the necessity for general blood-letting in half the number of cases that formerly required it.

I cannot conclude these remarks without adverting to the congestive fever that is endemic to various parts of the southern country. Congestive fever is characterized in its onset by strongly marked symptoms of congestion of some of the viscera most important to life, and, of consequence, by great oppression of the nervous system simulating debility. We may, therefore, conclude that its primary impression is on the nervous system, and that its characteristic symptoms may be referred to the want of equal distribution of nervous power. Its suddenly overwhelming effects on all the viscera of organic life, producing fatal congestions, is further proof of this hypothesis. When the brain is the seat of congestion, the symptoms are evident. When the lungs, equally so. When the abdominal viscera, the stomach furnishes evidence not to be mistaken. What, then, is the first indication? Relieve the nervous system, and then the organ affected can be reached by remedies. Blood-letting, both topical and general, by taking away from the engorgement of the organs, acts as a revulsive. It is necessary, however, to watch very closely its effects; for, in this disease especially, "thus far shalt thou go, and no farther." If the reaction is prevented, by too great an abstraction, the means which might have been the salvation of the patient prove his destruction. When a remission is produced by this treatment, then the great advantage of quinine evinces itself. Sedation produced by it enables the application of other remedies that are indicated—revulsives to the spine, stomach, or back; calomel, to relieve the stomach, liver, or bowels; and ice, to relieve the gastritis. In the algid variety of this disease, where the patient is pulseless and cold up to the trunk, without, however, the mental faculties being affected, proving a retrocession of the vital fluid to the centre, and an engorgement of the source of animal heat—the lungs,—then the indication is a diffusible stimulant, and that which has proved most advantageous in my hands is gum camphor ʒj, ether sulphuric ʒj; a tea-spoonful of this solution in a wine-glass full of brandy-toddy, every half hour, till the lost balance of the circulation begins to be restored; then re-



vulsives will act—such as turpentine, mustard-poultices, or stimulating frictions of croton-oil to the extremities and spine; also, mustard and salt pediluvia, &c. There is one diffusible stimulant that I think of immense value—the cold *douche*. By placing the extremities in hot water, and dashing cold water over the body, reaction sometimes takes place in desperate cases of internal congestion. The topical external congestion produced by cups also assists. But what is gained by this treatment, if the same train of symptoms are again to supervene in the next paroxysm? The organs congested become in a passive state of dilatation, and offer less resistance to the influx of the congesting fluid: the shattered nervous system also offers less resistance; and the organs may either be ruptured, or maintain their state of *stasis*, despite of remedies. Either of which events will prove fatal. It is here that quinine has been most advantageous. In doses of ten to forty grains, combined with calomel—ten to twenty grains at first, and afterwards given alone—it produces that sedation which destroys periodicity. I have seen this effect produced in so many instances, that I cannot doubt it. I do not go as far as those that state this to be your only indication, or to suppose that quinine is the El Dorado in medicine. But it is a breastwork, without which the enemy cannot be repelled, and behind which the system can be so fortified as to make the necessary arrangements to repel him.

Another disease which frequently attacks residents in warm climates is neuralgia, in various forms. The same miasmata which produce intermittent fever in some, will produce periodical hemicrania in others. It seems to be the most probable supposition, that malaria and other poisons, as well as remedial agents, act through the sentient extremities of the nerves, and affect the brain and nervous system generally by irradiation. In this painful affection, quinine and morphine, either of them separately, prevent the periodicity; and we may therefore draw the inference, that, as they produce the same effect, their *methodus medendi* is the same. Large doses of quinine, in many cases that have come under my observation, have invariably proved beneficial; small doses have as invariably aggravated the symptoms. Large doses of morphine have had the same beneficial tendency, and small doses have been attended with an aggravation of the symptoms. The sedative influence of morphine being acceded to, it would appear that quinine must act in a similar manner in this disease. It is a matter of general observation, that opium may be exhibited in very large doses, in cases where great pain is present, without producing any deleterious effects; while, if the same quantity were given in a healthy state, its poisonous properties would evince themselves. Why may not quinine, in like manner, in functional injuries of the nervous system, have the effect of quieting the symptoms; while, if given in a state of health, we would expect different results to follow its application? I have only treated of hemicrania so far as the therapeutic application of quinine is concerned, without advertng to other remedies. In many other forms of neuralgia, quinine has been followed with equally beneficial results. I will conclude by advertng to the probable cause of the diversity of opinion among eminent men, at the north and south, on the subject of quinine treatment. At the north, there is more tolerance of the system to repeated general blood-letting, and a greater necessity for it, than at the south; and, therefore, Dr. Rush and his followers thought that great quantities of blood should be abstracted in all acute diseases. At the south, this treatment will not answer, except in very violent cases, as the blood-making powers are not so vigorous, and too much debility follows. Quinine was found to be a substitute for this treatment, and its after-effects were not so injurious. Its great advantage, indeed, is the speedy convalescence which follows diseases treated by it. The great bulk of medical men being educated in northern schools, and the teachers inculcating views adapted to their climate, especially in clinical instruction, is another reason why the difference of diseases in northern and southern latitudes is not more generally attended to.

I am, sir, very respectfully, your obedient servant,

D. C. DE LEON, *Assistant Surgeon U. S. Army.*

Surgeon General THOMAS LAWSON,  
*U. S. Army, Washington, D. C.*

REPORT OF ASSISTANT SURGEON THOMAS C. MADISON.

FORT LEAVENWORTH, December 17, 1843.

SIR: I have the honor to transmit answers to the following interrogatories on the administration of the sulphate of quinine:

"1. What is the extent of your experience in this respect?"

Answer. In February, 1841, I met with Surgeon B. F. Harney, then medical director of the Florida army, from whom I received the first suggestions as to the propriety of administering quinine in doses larger than those ordinarily prescribed, and have continued to practise the above up to the present period.

"2. Was it always the sulphate of quinine that you have prescribed? If so, was it pure?"

Ans. I have always prescribed the sulphate of quinine, and have never suspected its purity—the effect being always such as anticipated.

"3. From what source has your quinine been obtained?"

Ans. From the medical purveyors of the army.

"4. In how large doses have you administered it, both as regards the extreme and average quantity?"

Ans. One scruple is the extreme dose I have prescribed at one time, though in some instances the above amount has been repeated every two or three hours, till as much as two drachms have been taken. The average dose is ten grains.

"5. State the specific diseases in which you have employed it, with all the necessary details, and especially as regards the tonic or atonic state of the system; and whether injurious effects, or at least unpleasant symptoms, did not less frequently supervene in the adynamic state than when the powers of life were in an exalted condition."

Ans. Congestive, remittent, and the different types of intermittent fever, cephalalgia, and neuralgia, or nerve-ache, occurring in any part of the body, as odontalgia, otalgia, &c.—I give quinine in both the tonic and atonic states of the system. I have seldom seen unpleasant symptoms, and never injurious effects, from the exhibition of quinine, in either the dynamic or adynamic condition of the system. Quinine causes tinnitus aurium less frequently when the powers of life are in an exalted condition. I have seen the most intense headache entirely relieved when the pulse was full, strong, and frequent, and the skin hot and dry.

"6. Give your opinion as to the *modus operandi* of this therapeutic agent: whether, for instance, you regard it as a tonic, a sedative, or a stimulant?"

Ans. I regard quinine, in different diseases, and in different stages of the same disease, as possessing all of the above properties.

"7. Since the practical introduction of quinine in large doses, the statistics of this Bureau exhibit a much higher ratio of diseases of the bowels—as, for instance, diarrhœa and dysentery; and, also, a much higher average of mortality from the same diseases. It remains, therefore, to be determined how far this result is due to this cause, or the operation of other agents."

Ans. I do not believe that quinine has ever caused either diarrhœa or dysentery, nor do I believe that its administration has ever led to the death of a patient; the occasional reports in different medical journals to the contrary notwithstanding.

"8. What have been your observation and experience in regard to the influence of the climate of Florida; the acute diseases incident thereto; or the use of quinine in inducing acute and chronic affections of the liver and spleen?"

Ans. The climate of Florida had, no doubt, great influence in inducing acute and chronic diseases—hepatitis, splenitis, gastritis, inflammation of the brain, diarrhœa, and dysentery—when you take into consideration the many privations to which the troops were necessarily subjected, the fatiguing marches while exposed to the direct agency of a hot sun's rays, the indifferent character of the water they were compelled to drink, the unwholesome food, and



the complication of scorbutus, especially at many or all of the interior posts. I have never known quinine to cause either acute or chronic affections of the liver or spleen. The class of people who seemed to suffer most from the sequelæ of fever—enlargements of the liver and spleen, anasarca, or dropsical effusion in any part of the body—were those commonly denominated “Crackers,” who left Georgia soon after the commencement of the war, and squatted in the vicinity of many of the military posts for protection. None of the above class had ever heard of quinine, nor had they ever used any preparation of cinchona whatever.

“9. State whatever else you may deem appropriate to the subject.”

Ans. Quinine frequently acts on the glands (particularly the salivary) and liver, exciting both salivation and the secretion of bile. In its action on the liver, it is very nearly allied to calomel, (protochloride of mercury,) and the character of the alvine evacuations is precisely the same. During the Big Cypress expedition, when we were marching week after week through mud and water, seldom encountering sufficient dry ground on which to encamp, I was particularly careful to exclude calomel from my list of remedies. I prescribed quinine for a captain of dragoons under intermittent fever; ptyalism was the result, and I found it quite difficult to convince the officer that there had been no mercurial combination. Its action on the skin is very decided; and when the conditions for diaphoresis are unfavorable, diuresis is the result; though I have never myself noticed the latter effect. In a case of intermittent diarrhœa, which recurred with the strictest periodicity every day or every other day—I do not recollect the exact type—an assistant surgeon, with whom I was associated at the time, administered twenty grains of sulphate of quinine with perfect success. In conclusion, as all diseases partake more or less of an intermittent character, and as the sulphate of quinine is the great anti-intermittent, *par excellence*, I consider it the most valuable remedial agent of which the *materia medica* can boast.

I am, sir, most respectfully, your obedient servant,

T. C. MADISON,  
*Assistant Surgeon U. S. Army.*

Dr. THOMAS LAWSON,  
*Surgeon General U. S. Army, Washington, D. C.*

#### REPORT OF ASSISTANT SURGEON RICHARD F. SIMPSON.

FORT LEAVENWORTH, Mo., 1st December, 1843.

SIR: To the “interrogatories” contained in your “circular” of the 14th August last, I have the honor to make the following replies:

“1. What is the extent of your experience in this respect?”

Ans. My experience must, of course, be limited; but, as far as it goes, is *decidedly* in favor of large doses—*i. e.*, in doses much larger than are prescribed by all the works on the *materia medica* to which I have had access.

“2. Was it always the *sulphate* of quinine that you have prescribed? If so, was it pure?”

Ans. I have never prescribed any other preparation of quinine than the sulphate, and believe it was pure, but, indeed, did not test its purity by any other means than a red heat.

“3. From what source has your quinine been obtained?”

Ans. From the medical purveyors of the army, with the exception of a small quantity used during the past summer.

“4. In how large doses have you administered it, both as regards the *extreme* and the *average* quantity?”

Ans. The *extreme* dose was thirty grains, and the *average* about ten. In a case, reported below, two hundred grains were administered in a very short time.



"5. State the specific diseases in which you have employed it, with all the necessary details, and especially as regards the tonic or atonic state of the system; and whether injurious effects, or at least unpleasant symptoms, did not less frequently supervene in the *adynamic* state than when the powers of life were in an exalted condition?"

Ans. I have employed it in simple and complicated intermittent, remittent, and congestive fevers; intermittent neuralgia, intermittent ophthalmia, intermittent cephalalgia, epilepsy, &c.

Prior to the administration of quinine in simple intermittents, I seldom find it necessary to prescribe any evacnants, but give it in the intermission, in two doses of ten grains each; occasionally the whole quantity is ordered two or three hours before the expected attack. I cannot give preference to either practice; the latter has been quite as successful as the former. My limited experience in the treatment of intermittent fever has taught me that the more the patient is purged, puked, or evacuated in any way, to prepare his system for the quinine, the more liable he is to relapses.

When the disease is complicated with dysentery or diarrhœa, I premise the administration of this medicine by a dose of ol: ricini and tinc: opii; after its operation, the quinine is given, with a few grains of pulv: Dov: et sub: mur: hydrarg.

As regards the use of quinine in remittent fevers, I have usually delayed it until a subsidence of the febrile symptoms took place; but then, again, I have ordered it in twenty-grain doses, notwithstanding an irritated pulse, hot skin, thirst, and head-ache. In all instances the disease has yielded; under such circumstances it acted powerfully, either on the skin or kidneys, or produced bilious discharges from the bowels.

The only cases of unequivocal congestive fever, that I have treated, were in Florida; the most interesting one of which occurred at Punta Rassa. The man was attacked suddenly with drowsiness, vertigo, and urgent thirst; bowels constipated, tongue dark-brown and dry, anorexia, pulse small and quick, extremities cold, and in a few hours low muttering delirium came on. Sinapisms were freely used, and a mercurial purge given. On the succeeding day the patient was more prostrated; the delirium continued, with subsultus tendinum; alvine dejections involuntary, and of a clay color; urine also passed in bed; tongue almost black and very dry. Blisters were now applied to the nape of the neck and extremities, and quinia et sub: mur: hydrarg:  $\bar{a}\bar{a}$  grs. xx, ordered every hour. After the third dose I imagined a slight improvement; the calomel was omitted, and the quinine continued every two hours. Shortly after the last dose of mercury, it acted on the bowels, bringing away very large dark and offensive stools; this I regarded as favorable, and reduced the quinine to ten grains at short intervals, until the patient had taken, in less than 18 hours, 200 grains. On the third day there was, evidently, great improvement; the tongue was moist, the pulse more full and regular; the blisters had taken effect with the disappearance of the vertigo, delirium, &c.; the patient slept some during the day, and soundly at night, from the influence of half a grain of morphine. Apprehending, on the fourth day, a return of the congestive symptoms, ten grains of quinine were ordered every third hour, and the blisters to be dressed with ungt: mer:. The patient on the fifth day was so much improved that only an inf: serp: et elix: vit:, wine, and soup were prescribed. The mercury did not salivate him. His convalescence was slow, but perfect.

It may, perhaps, add somewhat to the interest of the case to remark, that before the man was able to leave the hospital, the hurricane of the 19th October occurred, and he was in water nearly six hours without any clothing except a shirt. Whether the credit of the cure in the above case is to be given to the mercury, blisters, or quinine, one thing is evident—that, notwithstanding an apparent congestion of the brain, the latter did him no injury, but, on the contrary, was the undoubted means of saving his life.

I might detail similar cases, but of less interest. In two instances only have I seen the medicine fail in congestive fevers—one, at the general hospital, Cedar Keys; the other, at this post. In the latter, the man had had frequent attacks of pleuritis, and no doubt labored under lesion of the lungs; in the former, reaction could not be established by the most powerful

stimulants, together with large doses of quinine. I made a post-mortem examination, and found a deeply congested liver, with an injected state of the mucous coat of the stomach; but I believe that the condition of the latter organ occurred *in articulo mortis*.

Only one case of intermittent neuralgia has come under my observation; the pain was in the tibial nerves; the type quotidian. Twenty grains of quinine in the intermission relieved the patient, without any evacuates.

During the past summer, I met with an unusually obstinate case of ophthalmia; various means, such as cathartics, cups, blisters, antimonials, astringent washes, &c., were used to subdue the inflammation, but without success; the patient had been subject to intermittent fever, and, upon inquiring minutely into his symptoms, I learned that the eye was much more painful in the afternoon of each day, and that it declined about the middle of the night, with a free perspiration. Twenty grains of quinine were given him, in two doses; the pain and inflammation left the eye, and he quickly recovered.

I have seen but two cases of periodical headache; the pain came on about 11 A. M., in the left temple, and over the left eye. Twenty grains of quinine in the intermission, without previous evacuation, cured them perfectly.

The only remaining case of disease, of any interest, in which I have prescribed large doses of quinine, was one (if it may so be called) of malarious epilepsy. In the summer of 1842, while on a branch of the St. Mary's river, Florida, I was requested to prescribe for Miss G—, *at*at. 20, who had been subject to epileptic attacks for 14 years; at the early age of six years she was seized with a severe dysentery, which continued with great violence for eight days, when the first fit of convulsions came on; they followed each other in rapid succession for three-quarters of an hour, and left her in a comatose state from 3 o'clock, P. M., until sunrise on the following morning. The dysenteric symptoms began to decline, and in a few days she was entirely well of them, and enjoyed pretty good health for nearly two years; her memory was, however, much impaired. At the expiration of two years, the convulsions returned, and continued to recur with great regularity at the period of every full moon, for eighteen months, when they became very irregular, attacking her several times during the month—occasionally at night, in bed, but more frequently during the day; again, they would not return for two or three months. About her tenth year, a large and painful tumor, having all the characteristics of high inflammation, made its appearance on the dorsal aspect of her right hand; but in a few days would resemble a contusion, and remain *in statu quo* for some months, without any tendency either to resolution or suppuration. The tumor would occasionally disappear from the hand, and fix on some other part, generally the metatarsus of the left foot—though no portion of the body was exempt from it; the opposite side was, however, always selected. During the declension of the tumor, and before it was located in its new position, the convulsions were frequent and severe, amounting to twenty or thirty in twenty-four hours. In addition to her other sufferings, she became subject in her 15th year to a distressing vertigo—so severe, indeed, that she was incapacitated from either walking or standing without assistance. The catamenia appeared at 19; without, however, producing the slightest change in her deplorable condition. About two years ago, the tumor attacked the left hand, and a small abscess formed near the first phalanx of the middle finger. The ulcer was healed with great difficulty.

The above history of the case was furnished me by her mother, who was very ignorant and superstitious, believing—and I failed in convincing her to the contrary—that her daughter was under the influence of witchcraft.

At 20, the following condition and symptoms were present: face exsanguineous; appetite good; bowels constipated; furred tongue; pulse small, rapid, and intermitting; deep-seated pain in the anterior part of the brain; metacarpus of the right hand has the appearance of a contusion, and somewhat sensitive to the touch; neuralgic pains in the arms, legs, chest, and abdomen; sleeps tolerably well; can recollect the faces of strangers, but not their names; constant vertigo; unable to walk, or even stand, without assistance; lower cervical and upper



dorsal vertebræ very tender to the touch; menses regular, healthy in appearance and quantity; and has occasional fever of the tertian type. Cups and blisters were applied to the spine, and the bowels opened by calomel and rhubarb. Permanent irritation to the lumbar vertebræ, blue mass and castor-oil to regulate the bowels, and the nitrate of silver, were used with only temporary benefit, for two months. Confidently believing that but little improvement would succeed the above treatment, I determined, in addition, to try the effects of quinine, as there was scarcely any doubt of the malarious origin of her disease, and that quinine was an antidote to the poison of that deleterious but invisible agent; accordingly, 20 grains were given at night, and repeated early on the following morning. The medicine produced a fullness of the vessels of the head, tinnitus aurium, and partial deafness, but relieved her so much from the vertigo, &c., that she was enabled to walk some distance, which she had not done for years before. The bright anticipations of recovery were, however, of short duration; the vertigo, &c., returned in five or six days, and the medicine was repeated, with a similar result. Indisposition having disabled me from visiting her, I sent her the quinine and oxide of zinc, and heard that she had much improved, although her sanguine hopes of recovery had been dissipated by the occasional return of the convulsions, vertigo, &c. From the long standing of the above case, I believe all the powers of the "healing art" would have been inadequate to have effected a perfect cure; but am firmly of opinion, that if the quinine could have been used for a sufficient length of time, she would have been materially, perhaps permanently, benefited by it.

Lastly. I have to state that I do not recollect ever to have seen injurious effects from the use of quinine in fever; for I presume that is what is particularly referred to by the "powers of life being in an exalted condition."

"6. Give your opinion as to the *modus operandi* of this therapeutic agent—whether, for instance, you regard it as a tonic, a sedative, or a stimulant?"

Ans. So little is known about the *modus operandi* of any medicine, that I cannot venture a theoretical opinion; but will merely state the effects that I have seen from the drug under consideration:

Quinine, in large doses, seems to act as a tonic, sedative, or stimulant, in certain modifications of disease; this may appear a contradiction, but a reference to the above cases will establish the fact. In the case of congestive fever, it certainly operated as a powerful tonic and stimulant; and, on the contrary, in the case of epilepsy, it produced a sedative effect, or at least it quieted the irregular action of the heart and arteries, and controlled the nervous system in a remarkable manner. In a few instances it has caused a soreness of the mouth, resembling ptyalism. I have also seen it act powerfully on the skin and kidneys, and produce bilious evacuations. In intertropical regions, and marshy districts of higher latitudes, the quinine undoubtedly acts as an antidote to the malarious poison; this is abundantly proved by its acknowledged power over all diseases of a miasmatic origin.

"7. Since the practical introduction of quinine in large doses, the statistics of this Bureau exhibit a much higher ratio of diseases of the bowels—as, for instance, diarrhœa and dysentery—and also a much higher average of mortality from the same diseases. It remains, therefore, to be determined how far this result is due to this cause, or to the operation of other agents."

Ans. Almost simultaneously with the practical introduction of large doses of quinine in army practice, a great proportion of troops was sent to operate against the Indians in the swamps and marshes of Florida. Will not that account for the high ratio of bowel diseases? It is admitted by all physicians that "koino-miasmata" are not only a cause of fever, but also of dysentery, diarrhœa, and other affections of the abdominal viscera. Quinine does occasionally purge; but, so far as I know, it never has produced a dysentery, diarrhœa, or any thing approximating to them.

"8. What have been your observation and experience in regard to the influence of the climate of Florida, the acute diseases incident thereto, or the use of quinine in inducing acute and chronic affections of the liver and spleen?"



Ans. Not only in Florida, but also throughout the greater part of the southern section of the United States, may be seen the horrible effects of malaria in inducing physical, and perhaps mental imbecility. Even the growth and development of the infant are frequently arrested by its influence; and almost before the child has attained the age of maturity he is borne down with the decrepitude of old age, or at least lives a protracted and lingering life, "like the sickly exotic of a green-house." The few cases of acute and chronic disease of the liver and spleen that came under my observation in Florida, were attributable not to the use of quinine, but to the deleterious effects of malaria. Many of the citizens on the frontier of Florida were laboring under the sequelæ of intermittent fever—such as anasarca, sallow complexion, enlarged spleen, &c.: these conditions were the effects of repeated attacks of ague, and not of the use of quinine, for there was none in the country; consequently, they could not have been caused by it. I furnished a few with the medicine, with directions to take it in fifteen-grain doses, and learned that it not only arrested the disease, but also reduced the spleen to its normal condition, and relieved the icterode hue of the skin. Similar results I witnessed in the general hospital, Cedar Keys. I should also state that, in addition, small doses of calomel, and mercurial frictions over the enlarged viscus, were used. It was remarked by Dr. Randall and myself that almost all the cases of the above affections that came under treatment in the general hospital were sent from posts where it was well ascertained that the medical officer prescribed very small doses of the medicine. I conscientiously believe that, as the prejudice against quinine diminishes, in the same ratio will the sequelæ of intermittent and remittent fevers disappear.

"9. State whatever else you may deem appropriate to the subject."

Ans. Above I have given the substance of my experience in the use of quinine; but will take this occasion to state, that I should not only do great injustice to a valuable member of our corps, but also to my own feelings, did I fail to acknowledge who first taught me its value. I went to Florida with all the prejudices and dogmas of the schools against it; but, fortunately, soon after my arrival in the Territory, I met with Surgeon B. F. Harney, who instructed me in its application to disease: and I believe, by following his advice, I saved many lives which otherwise would have fallen victims to the impotent practice of two-grain doses.

R. F. SIMPSON,  
*Assistant Surgeon.*

DR. THOMAS LAWSON,  
*Surgeon General U. S. Army, Washington, D. C.*

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REPORT OF ASSISTANT SURGEON JOHN BYRNE.

FORT BRADY, *September 9, 1843.*

SIR: In answer to the queries contained in your circular of August 14, 1843, I have the honor to submit the following replies:

1st. I was upwards of three years in Florida. For the first year and a half, I served (except for short periods) with but one company, stationed at healthy positions, (Micanopy, and No. 3;) so that, during this period, I saw but few cases of fever, and, in these few, I used quinine in small doses, and in intermittents only. During the remainder of my service I was stationed, with commands varying from four companies to two regiments, often at sickly positions, and occasionally at the general hospital at Cedar Keys. I was ordered to Sarasota when fever raged to such an extent among the 1st infantry: a part of the sick of which regiment I accompanied to Cedar Keys. Here, for a few weeks, I assisted Dr. Wright, through whose kindness I daily saw all the cases, (some two or three hundred in number,) and the practice pursued.

Of the number of fevers and dysenteries which I have treated, I cannot form a correct esti-

mate; but I think I am within bounds in saying that my daily sick-report, during the last two years of my service in Florida, varied from fifteen to two hundred—exclusive, of course, of cases occurring among quartermaster's men, officer's families, and citizens. If more exact information is deemed necessary, I would refer to the quarterly sick-reports of Micanopy, from May to September, 1840; of Fort King, from September, 1840, to February, 1841; of Tampa, from February to July, 1841, (during which time I was stationed at Tampa with other medical officers;) of the fort on Pease creek, for a part of the same summer; and of Tampa, from August, 1841, to January, 1842.

2d. I nearly always used quinine in the form of sulphate, as I gave this salt mechanically diffused in water: occasionally, however, though rarely, I gave the super sulphate in solution. From the effects of the article I used, I have little hesitation in declaring my belief that it was pure. Moreover, from the obstinacy of some cases of intermittents, I was, at times, led to doubt the purity of the quinine employed. But, on testing it with alcohol and sulphuric acid, I always found it unadulterated.

3d. My supplies of this article, with the exception of a small quantity received at Fort King, came, I have reason to believe, indirectly from New York. As well as I can recollect, it was generally prepared by Pelletier & Caventou; but of this I am not quite certain.

4th. The usual quantity of quinine I prescribed at one dose was 4 grs. This was repeated, so that from 10 to 20 grs. should be taken in from 8 to 12 hours, immediately preceding the expected paroxysm of disease, which it was designed to ward off. I have, however, administered it in grain doses—very frequently in 10 and 12-grain doses, and several times seen it given in 40-grain doses, repeated until two or three doses had been taken.

5th. I have employed quinine in the treatment of simple intermittents, remittents, congestive fevers, and some few cases of continued malarious fever of low type. In combination with Dover's powder, I have prescribed it with advantage in some cases of chronic dysentery, and, in conjunction with calomel and Dover's powder, in acute dysentery of low type.

The remarks which I shall submit will be arranged with a view to the order of the above enumeration of diseases. Let me state, however, in the outset, in direct answer to the questions contained in paragraph 5 of your circular, that my experience warrants the belief that injurious and unpleasant consequences do less frequently supervene from the use of quinine in adynamic states, than in affections in which the powers of life are in an exalted condition.

The diseases of settlers in Florida from the north assume a more inflammatory form during the first year of their residence in the south than they do subsequently. This remark is particularly true of fevers. Hence, in fevers arising in such subjects, due attention must be paid to the employment of antiphlogistic measures previous to the use of quinine. Indeed, in this class of cases, I have rarely derived those markedly happy results from quinine which I have seen follow its judicious employment in the fevers of persons who had been two years or upwards in the south, particularly if they suffered many attacks of the disease. While stationed at Fort King, this fact was pressed particularly on my attention. The garrison of the fort consisted of a portion of the 2d infantry, who had served for upwards of two years in the south: and in its vicinity was encamped the 8th infantry, which had just arrived from the north. Time and again, I observed that quinine could be administered successfully in the fevers of the soldiers of the 2d, without much attention to the ordinary precautions deemed necessary in the use of this medicine; while, employed in the same manner, and during the same epidemic, with the 8th, if it did not exasperate the disease, it at least failed to check its progress. This fact, I may remark, may account for some of the discrepancies in the opinions entertained in reference to the effects of quinine.

In accordance with the above principle, I used antiphlogistics in treating the intermittents of new comers, until a complete intermission was obtained. I then administered quinine generally in substance, either alone or combined with a diaphoretic or nauseant. I found that from 6 to 20 grains, administered during the apyrexia, was sufficient to check the disease. The



quantity varied with the season and locality. The advantages attributed to the various modes of administering it naturally come under discussion in this place.

Every physician has his own method of exhibiting quinine; and as he meets with success, he infers that his is the only true one. Now, the truth is, that if a *sufficient quantity* of it, when it is indicated, is administered in the intermission or remission of a malarious fever, it will check the disease. I conceive it of no importance, so far as the ultimate effect is concerned, whether it is given in 2, 3, 4, or 16-grain doses, provided enough of it is taken in the proper time. One advantage the larger doses certainly possess—namely, that the patient is not so apt to be sickened by the frequent repetition of a nauseous drug. But as the accession of a paroxysm of fever cannot be predicted within an hour or two, when fevers prevail to any extent, (for they then anticipate variously,) we often fail in warding off the attack when we administer the whole of the quinine at one dose. From these circumstances, I have been led to use it, as I have already stated, in four-grain doses, as sufficiently large to prevent too frequent repetition, while, at the same time, the influence of at least 12 grains is insured before the period of accession, even if the paroxysm anticipates considerably. Large doses, I have often heard it asserted by the advocates of them, rarely produce those disagreeable irritative effects, such as singing in the ears, &c., which we frequently witness from the use of small ones. It was said by way of explanation, that quinine, like opium, is a stimulant in small doses, and a sedative in large ones. My experience would not justify me in assenting to these propositions. After a careful examination of a number of cases in which I administered quinine in large (12 to 16 grains) and small doses, with a view to this very subject, I came to the conclusion that the disagreeable effects referred to followed the exhibition of large doses as often as it did small ones, and that they are dependent upon the peculiar organization of the nervous system, and not upon the quantity of quinine given at one dose.

But if the dose in which quinine is administered in intermittents and remittents is a matter of indifference, such is not the case in congestive fevers. Here the use of large doses has a real value, as I shall notice when I speak of this class of fevers; and one of the most important facts learned from the use of large doses in ordinary fevers, is, that they can be administered with impunity; so that in congestive cases the physician does not hesitate to use such quantities of quinine as can alone often be successful, but which he would not have ventured to administer had it not been for this knowledge.

Medical men differ, too, respecting the period of fever at which quinine is administered with most effect. For my part, I have used it only in the intermission, except in congestive cases. I have, however, seen it administered, in a few cases, in the middle of the paroxysm of remittents of rather a low type. In these instances it did not aggravate the disease, although it did not alleviate it. Nor did it supersede the necessity of administering the remedy in the intermission, for the disease ran on until it was thus checked. It will not be out of place to remark here, that these cases afforded examples of that false reasoning, by which a remedy frequently gains an undeserved reputation. Quinine was administered about 9 p. m. The next morning the patient was nearly free from fever, oppression of the brain, and other unpleasant symptoms; all of which beneficial changes were attributed to the quinine, while, in reality, they were referrible to the stadia—the habits, if I may so express it, of the disease itself. Had no quinine been administered, the result would have been precisely the same. Having used quinine only in the intermission and remission, I cannot, from observed facts, pronounce upon its efficacy when given at the height or toward the end of a paroxysm; but, judging from analogy, I am not prepared to believe that its use, under such circumstances, is safe and efficacious, aggravating no symptom or any inflammation which may be present, as I have heard some medical officers assert: although I will admit that it is less apt to do so than is generally believed.

Again, we are told by some, that quinine, if delayed until the 7th, 14th, &c. days of periodical fevers, displays more power in checking them and preventing their return than if adminis-



tered without regard to these periods. I have used it in this manner, but have not derived from it the predicated advantages. Delay in the use of it is open to some objections, and affords no real advantage. As an almost universal rule, I can check an intermittent on any day of its progress I please, and hence cannot do it more quickly on the 7th or 14th, &c. And, secondly, nothing will prevent its return, in most cases, short of leaving the atmosphere which produces it. *Sublata causa, tollitur effectus.* As long as malaria is in operation, so long, for a certain period at least, will it produce fever and cause its return. That which produces fever in the first instance, when the patient is in good health and best prepared to resist disease, is certainly equal to the reproduction of it when the health has been impaired and the conservative powers of the system lessened. Such are the effects which common sense would lead us to anticipate, and such precisely are they found in practice.

Neither the administration of quinine on the 7th, 14th, &c. days, nor bleeding in the cold stage, will prevent the recurrence of agues, as long as the patient is exposed to the action of malaria. On the other hand, while we delay the use of quinine, our patient becomes weaker from the return of repeated paroxysms, and not unfrequently an intermittent runs into a remittent. His general health is more broken up when he does recover, and hence, presenting less vital resistance to disease, will be more liable to its return. For these reasons, I do not believe that the delay of the use of quinine until the 7th, 14th, &c. days of fever, is a correct practice.

In the intermittents of those who have resided for a few years in the south, particularly if they have suffered many attacks, quinine may often be used with the happiest effects, without recourse being previously had to any preparation of the system, as it is called. I rarely found intermittents, in Florida, accompanied by those evidences of diseased secretions so much spoken of by authors. The tongue was often clean, and the alvine discharges natural in character and frequency. In such cases, the use of preparatory means only weakened the patient and consumed time. A patient of this class reports, at 8 o'clock, that two days previously he had an ague fit at 11. Give him 10 or 15 grains of quinine at once, (add opium or a diaphoretic, if you please,) and there is an end of his ague for two or three weeks.

Finally, I have never met with an intermittent which I could not check for the time with quinine, or quinine and opium. Neither bark, opium, arsenic, nor any other medicine, can compare with it as an anti-periodic, either for certainty of effect, or (and more particularly) for the short space of time in which its effect is produced. I would not, however, be understood to say that I exclude than the rest not before from my practice; on the contrary, there are cases in which I much prefer some of them to quinine; but I merely state a general law, to which, of course, there are exceptions.

In remittents, quinine was administered with great advantage during the first fair remission, which usually occurred on the fourth day of their progress. Thus was a disease at once cut short, which would otherwise have taken several days to run itself out. I was educated in the belief that quinine should be used in intermittents only, and after a careful preparation of the system; but that in remittents, its administration was not to be entertained for a moment. A more injurious opinion, if I can judge from what I saw of remittents in Florida, could not have been inculcated. For a year and a half I acted upon this principle, and can now call to mind more than one patient whom I permitted to be worn down by repeated paroxysms of fever, rather than have recourse to quinine, because no lengthened intermission or occurrence of chill marked the case as one of intermittent. Subsequently I learned the value of quinine in all malarious fevers having a plain remission, even if that remission was of but a few hours' duration; and then had the satisfaction of being able to put an immediate stop to a disease which, under the former treatment I pursued, would continue for a length of time, and either prove fatal in the end, or leave the patient very feeble after his recovery.

But it is in congestive fever that the value of quinine is particularly displayed. A patient falls down suddenly overpowered; he appears insensible; it is difficult to rouse him; or his countenance presents a vacant stare; and, when questioned respecting his condition, he informs

you that there is little or nothing the matter with him ; that he wishes not to be disturbed ; his extremities are cold ; his skin generally not above the natural temperature, and sometimes covered with a clammy moisture ; his breathing embarrassed. Now, I think I am correct in saying, that such a condition would formerly have been looked upon as one of congestion of the internal organs, and that venesection would have been resorted to for its relief. Quite differently would the advocate for the use of quinine, in such a case, reason. He would view it as one of poison from malaria, congestion not being the first link in the morbid chain, but the mere consequence of the poisonous impression made on the nervous system ; the antidote for this poisonous impression, experience has taught him, is quinine. In the supposed example, he administers 20 grains of it, in combination with capsicum, laudanum, turpentine, or camphor ; or he gives a smaller quantity, and directs its repetition in an hour or so ; he also directs the application of warmth and stimulating frictions. Reaction will be thus brought about, and but little else is required to insure the safety of the patient than a few large doses of quinine and Dover's powder, given some hours previous to the expected return of the paroxysm. I feel very confident that the result would have been different had the lancet been used, and quinine neglected, in the first instance. These are the cases in which it is not a matter of indifference whether large or small doses of quinine be used ; because there is frequently not time to give enough of it in small doses, and because, too, a most powerful impression on the nervous system is needed.

I have seen quinine used in connexion with calomel and Dover's powder in a few cases of persistent continued fever of low type, in which there were no prominent localizations. The ordinary remedies (calomel in small and repeated doses, among others) had been used in these cases for ten or twelve days, without any beneficial results. The patients daily became more prostrated—complaining of nothing but restlessness and general debility. The skin was at the same time hot, the tongue dry, and the pulse small and rapid ; the evacuations from the bowels of unhealthy character, but not frequent. In three or four days after the use of quinine, calomel, and Dover's powder, and of other simple means, their systems were affected by the mercury, the fever yielded, and they recovered after a protracted convalescence. Similar remarks will apply to some cases of typhoid dysentery which I witnessed. In these cases, I am convinced that the quinine contributed largely to the happy issue, by causing the mercury to be absorbed, or, by its action on the nervous centres, putting the system in a condition to be operated upon by the mercury. Explain the fact as you will ; it must not be forgotten that mercury and other means had had a fair trial, previous to the use of quinine, without any beneficial impression having been made on the disease.

In the above remarks, hastily thrown together, I have not, of course, attempted to point out the range of practice applicable to the diseases of which I have spoken, but have endeavored to confine myself to the therapeutical application of quinine in their treatment. Throughout, I have presumed the general principles of the treatment of fever known, and left it to be inferred that they were kept in view previous to or during the use of this medicine. My ideas of its efficacy in the treatment of fever are, in a great measure, based upon what I saw of the disease in Florida ; but in some degree, also, on the testimony of different medical men who have practised in malarious regions throughout the country. I am not unaware of the great changes impressed on disease by different climates and the varying constitutions of the atmosphere ; that the efficacy of quinine in the treatment of Florida fevers during 1840, 1841, and 1842, may have been owing to a peculiar constitution of the air, which, by changing, would render it valueless, and that consequently a more extended experience in different climes and seasons may change my opinion of the value of this agent. Be it so. For the present, I must trust to conclusions drawn from such clinical experience as I have had. These conclusions, together with the circumstances under which they were drawn, I have given in honesty, and leave it to others to judge of the value to be attached to them.

6th. I am at a loss to give any satisfactory explanation of the *modus operandi* of quinine.



The term *tonic*, *sedative*, or *stimulant*, conveys no just idea of its action. There are tonics, stimulants, and sedatives, of ten times more power in each of these modes of action than quinine, and which yet do not produce the peculiar effects which alone render this agent valuable. Hence, I infer that its powers are independent, at least in a great measure, of any tonic, stimulant, or sedative properties which it may possess. Though classed by writers on *materia medica* among tonics, I conceive that the idea of its action being merely the result of tonic or stimulating properties is particularly unhappy, because it has prevented its use in malarious fevers, where it would have been of great service—and why? Because fever, it is reasoned, is a sthenic disease, and a tonic or stimulant certainly cannot be applicable to such a condition.

Quinine is an anti-periodic, and a species of antidote to malarious poison. If used under proper restrictions, and with a view to these two properties, it will be found, I apprehend, not to disappoint expectation. But the question still recurs: By what mode of action does it produce these anti-periodic and supposed specific effects? I answer, by a powerful impression made on the nervous system; but of the nature of this impression I am ignorant. In my opinion, it is not enough to say that it is a tonic or a stimulating one: for brandy and ammonia, gentian and iron, though powerful stimulants and tonics, will not produce it. Nearly its whole force is expended on the nervous system, and it may or may not, and generally does not, exert a very marked influence over the vascular. It is true, this explanation is by no means as satisfactory as could be desired. But what solution of the *modus operandi* of any medicine is? Epsom salts purges, but why? Because it irritates the muscular fibres of the intestines. But how does it produce this irritation? By its action on the nerves distributed to these muscles. But, again: *how* does it act on these nerves? Brandy acts on them, and irritatively, too, one would suppose: and yet, so far from purging, often checks diarrhoea. The *how* here is unanswered. The truth is, that the ultimate effects of medicines, like all ultimate causes, is buried in obscurity: and it is better for us to be aware of our ignorance of the *modus operandi* of quinine, and be content to use it for the well-known effects which experience teaches us it will produce, than to call it a tonic, stimulant, &c., which, involving a false theory, will lead to an erroneous practice.

7th. I do not think that large doses of quinine are more apt to produce bowel affections than small ones; and, indeed, I do not believe that they will produce them at all, if used with ordinary precaution. In intermittents complicated with dysentery, I have known the discharges rendered more bloody than they had been, and increased in frequency, by the administration of quinine. But I have, too, seen cases of dysentery and diarrhoea in which the bowels were so irritable, that opium displayed only its stimulating properties, and, in place of allaying the irritability, as it usually does, only increased it. Now, as I would not infer from this fact that opium produces dysentery; so, also, I would not conclude that, because quinine will, at times, aggravate bowel affections when they exist, it will produce them when the viscera are in a comparatively healthy condition. Like all medicines, quinine may be, and I feel satisfied has been, abused. But, from its action under these circumstances, it would be erroneous to draw conclusions against its judicious use. If the bowels are sound, it may, as an almost universal rule, be used, and used freely, in large or small doses, without deranging them. The solution of this question was surrounded with no small difficulties in Florida, and I can readily understand how there may be wide and honest differences of opinion on this subject. On the one hand, there were so very few patients who had escaped agues, and hence the use of quinine, that the cases of diarrhoea and dysentery were rare which did not afford the opposers of quinine a hook to hang their arguments upon. But, on the other hand, so universally and so constantly were our patients exposed to the causes which ordinarily, of themselves, produce diarrhoea and dysentery—as all kinds of exposure, indulgence in improper articles of food, the debilitation and irritability which a high temperature induces in the mucous membranes of the digestive organs, the operation of malaria, &c.—that it was, except in rare instances, almost impossible to say that a diarrhoea or a dysentery was caused by the use of quinine, and not by the causes just enumerated.



Again, patients should be under the physician's observation for months, to enable him to determine with any degree of certainty the question at issue. But, owing to the frequent changes of station of the medical officer, and of the commands with which he served, this could rarely be accomplished. I have more than once selected a number of fever cases, and treated them with and without quinine, for the purpose of determining the influence of this medicine in causing diarrhoeas and dysenteries : but the cases I have already enumerated prevented me from arriving at numerical results. I can only give it as my general impression, that quinine may be used freely and in large doses, if administered judiciously, without giving rise to disease of the abdominal viscera.

But your circular states, that since the practical introduction of quinine in large doses, the statistics of the Medical Bureau exhibit a much higher ratio of diseases of the bowels, &c. The medical philosopher is, of course, cautious of reasoning from the *post hoc, ergo propter hoc*. The coincidence mentioned in the circular may have arisen from more than one cause. No fact is more fully confirmed by an enlarged observation, than that disease changes its type in a curriculum of years, and expends its force on different systems of organs at different times. The remarks contained in lecture 18th of Graves's Clinical Lectures are peculiarly pertinent to this subject. May not a change in the constitution of the air in Florida have given rise to the diarrhoeal and dysenteric tendency which has been observable since 1840?

When I entered Florida, in the fall of 1838, diarrhoea and dysentery were comparatively rare, and of easy management ; such continued to be the case, as far as my observation extended, until the summer and fall of 1840. At this period, fevers became vastly more prevalent than they had been previously, owing, in part, to a succession of rainy and dry weather, and in part, I suppose, to an epidemic disposition of the air. Compare, for example, the quarterly sick-reports of Forts Micanopy and King, during 1840 and 1841, with the reports of the same posts during the year previous : bearing in mind that only cases of fever occurring at these posts, and not brought to them from other localities, should be taken into the account. This comparison will, I feel satisfied, sustain my assertion. If we compare Florida in 1840 and 1841 with its condition in previous years, it will be found that its soil has been undergoing, in many sections of the Territory at least, a process of drying, to such a great extent, that roads were constantly seen, in 1840 and 1841, high and dry, and all the country around them dry throughout the year, which commanders were compelled to causeway for miles, in the early part of the war, in order to afford a passage for wagons. Now, all writers agree that the evolution of malaria and prevalence of fever are coincident with this process of drying ; so that the fact which I have mentioned may, to some extent, explain the increase of fever in 1840 and 1841. Now we know how intimately the cause of malarious fevers is connected with the production of diarrhoea and dysentery. Where the former prevails, the latter are almost invariably found to exist. Why, therefore, should we be surprised that diarrhoea and dysentery should have increased in 1840 and 1841, and become more fatal than they had been previously? Why charge a result on quinine, when other well-known causes, sufficiently powerful to produce it, were in operation? Up to the fall of 1840, as I have already said, I found diarrhoeas and dysenteries very amenable to treatment. At this period I was ordered from Micanopy to Fort King ; and here, for the first time, I met with cases of these diseases which were very obstinate, and would not yield to the treatment which I had previously employed with invariable success in similar cases. Now, in the first place, bowel affections were not formerly obstinate at Fort King ; secondly, the use of quinine in large doses had not, at this time, been introduced into Florida, nor was it generally given in any other cases than intermittent ; and, thirdly, the command at Fort King had been under the care of Assistant Surgeon Moore, who was then, at least, and may be now, rather averse to the use of quinine, and a believer in its noxious influence on the bowels. Hence, I infer that the obstinate bowel affections I met with at Fort King could not have been produced by quinine ; and yet the increase and intractable character of these diseases dated, in my experience at least, from this very period, and were cotemporaneous with increase of fever. Now,

while I will not deny that quinine was often abused in Florida, during 1841, and that bowel affections might (but of this I will not be positive, though I will not deny it) at times be traced to this abuse, yet I cannot shut my eyes to the facts, that malarious fevers and bowel affections often owe their origin to one cause; that the increase of fever and bowel affections in 1840, &c., went *pari passu*; and, finally, that diarrhœa and dysentery commenced being more frequent and obstinate before quinine was used, either largely or in large doses, in Florida. Nor must it be forgotten, that length of exposure alone to the heat of the south, to the fatigues undergone, &c., must have rendered the mucous membrane of the bowels more irritable and obnoxious to disease. Hence, the longer troops remain in the south, within a period of four or five years, the more frequent, *cæteris paribus*, may we expect dysentery to be.

On the whole, then, I am disposed to think that much of the outcry against quinine is the result of preconceived notions. Among the older physicians, bark and enlargement of the liver and spleen were inseparable companions; so were dysentery, and organically or functionally diseased liver; hence the transition was easy to the conclusion that the use of quinine would produce dysentery. This is a part of those doctrines which taught, among other things, that bark is more efficacious in the treatment of fever than quinine. Now, all these doctrines may be true, but I have yet to see the demonstration of their truth.

8th. The effects of the climate of Florida are, an increase of the nervous excitability, impairment of the powers of the digestive organs, and a general feeling of feebleness, not inaptly expressed by the terms *enervated* or *relaxed*. Such are the results in the healthy portion of the country. When malaria is added (and it very generally is) to the high degree of temperature, malarious fevers in all their varieties of intermittent, remittent, continued, and congestive, together with diarrhœa and dysentery, are induced. Nine-tenths, if not a greater proportion of the diseases of Florida, may be ranged under one or other of these heads.

Liver affections are, I think, of rare occurrence in Florida, if we except the trifling functional derangements which are met with in fever. The temperature is not sufficiently high, and uniformly so, to produce them with any degree of frequency. This fact receives confirmation from the remarks made by Johnson, in his work on tropical climates, under the head of "hepatic affections."\* My dissections, too, confirm this conclusion; for I rarely met with any other (to me) appreciable deviation from the natural condition of the liver than the fatty degeneration consequent upon a life of intemperance.

From the fact that quinine was largely used in Florida, and that I rarely met with diseased livers, enlarged spleens, or dropsies consequent upon fevers, I must acquit this drug of the charge often brought against it, of inducing these affections. When they do exist, I am more inclined to attribute them to the depleting means often too liberally employed (dropsies), to the continued action of malaria, and to repetition of paroxysms of fever, which should have been checked at once by some anti-periodic.

If epidemics show a strong tendency to fasten upon some particular organ, physicians evince an equally strong one to follow their example. Until lately, the liver has nearly filled up the pathological anatomy of some physicians of our country, and calomel their therapeutics. So often have I seen patients drugged for bile and liver affections, where none existed; so very rarely have I seen unequivocally diseased livers in dead bodies, that I look with suspicion on those cases so often spoken of under the vague terms of hepatic derangements and congested livers. Nor do I extend to them a greater share of confidence when they are reported in connexion with the use of quinine, and said to exist as a pretty constant cause or part of dysentery.† These notions are so much opposed to my own observation, and savor so strongly of

\* See his comparison between the coast of Coromandel and the plains of Bengal.

† I might remark that the curative influence of mercury over dysentery (confessedly great), can be explained on more satisfactory principles than by its action on the liver. Mercury cures scleritis and iritis, but hardly, I suppose, by acting on the liver. I have opened many bodies dead of dysentery, but have seen few diseased livers.



the theories prevalent some ten or fifteen years ago, that I cannot but receive them with many grains of allowance.

I cannot pronounce upon the value of quinine in the treatment of enlarged spleens, as I have had very few cases of this affection under my management. I have not given it a fair trial in these cases, nor in neuralgic rheumatisms.

To sum up: I think that quinine should not be used in the open inflammatory stage of any fever, no matter how long this stage may last; that it is *particularly* efficacious in the treatment of malarious fevers only, and when some intermission, or pretty fair remission, can be obtained; that it may be given in large doses, if administered under proper circumstances, with as much impunity as in small ones; that it is generally a matter of no consequence in what doses it is administered in simple intermittents and remittents, provided from ten to twenty grains are given within a certain period of the expected paroxysm; that the large doses possess advantages in some few cases of remittents and intermittents; that the introduction of quinine in the treatment of the remittents of Florida was a great improvement on the old plan, in which it was neglected; that in congestive fevers, large doses are of great importance, and often cannot be replaced without danger by small ones; that quinine should be used with a view to its anti-periodic effects, and its specific influence in cases of malarious poisoning, and not merely as a tonic, &c.; and, finally, that if judiciously used, it may be given freely, and in large doses, without producing disease of the abdominal viscera.

In conclusion, I will take leave to disclaim all *ex parte* feeling on the subjects I have treated. Where such wide differences of opinion exist as do on the questions which have been discussed, a writer must lean to some side. I am very far from believing that quinine was not used in Florida without discretion by its ultra advocates. But I am equally convinced that it was often neglected by another class of physicians, when it might have been used with advantage.

Perhaps it will be but proper for me to state, that I am by no means so fully satisfied with the truth of the conclusions given in this communication as not to make me desire further opportunities of testing their truth.

In further illustration of my views respecting the use of quinine, I will refer to an article contained in a number of the American Journal of Medical Science, about 1841, by Dr. Petherbridge, (I think it is—I have not a file of this journal by me,) and to another in the July number of the same journal, for 1843, by Dr. Parry.

I am, sir, very respectfully, your obedient servant,  
JNO. BYRNE,  
*Assistant Surgeon U. S. Army.*

Dr. THOMAS LAWSON,  
*Surgeon General U. S. Army.*



## NOTE.

THE principal objects of the Surgeon General in causing this report to be prepared were twofold: first, to encourage in the medical officers the habit of observing and recording facts in medicine and the collateral sciences; and second, to bring them into more direct communion with the medical profession in civil life, by adding their contributions to the general stores of knowledge.

It is due to the medical staff, as a body, to state that this and other reports which have emanated from the Medical Bureau, by no means fully represent the extent of their contributions to science. Within a few years past, the medical officers have been called upon to co-operate with the Smithsonian Institution, in collecting specimens of the fauna of this country, and the Surgeon General takes pleasure in being able to state that the museum of that Institution has been materially extended and enriched by their voluntary contributions. They have also been invited to aid Professor Ehrenberg in his work on "Fluvial Deposits," by collecting specimens of mud and silt from the banks and beds of rivers: and to assist Professor Agassiz in obtaining specimens of fish, particularly from New Mexico, California, and Oregon. The responses to these invitations have been such as to elicit the acknowledgments and thanks of those learned professors.



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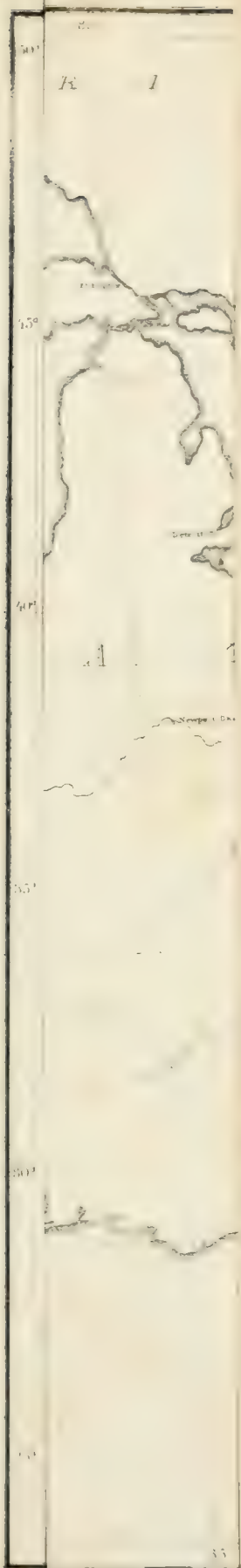
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OUTLINE MAP  
OF THE  
UNITED STATES  
EXHIBITING THE POSITION OF THE  
MILITARY POSTS

Prepared under the direction of

JOHN L. LANSON











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